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A guide to designing and implementing performance reporting to increase the confidence of conservation investors

Bush Heritage Australia

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Performance reporting to increase the confidence of conservation investors

Preface

Building investor confidence is critical to the success of any business. A primary mechanism used by organisations worldwide to maintain or increase investor confidence is reporting. By presenting information such as financial performance, liabilities and strategies for the future, reports give the investor the information needed to decide whether to continue investing.

Like any entity using external investments to deliver goods or services, organisations that deliver conservation outcomes can use effective reporting to build investor confidence. Continuous investment in conservation organisations is critical as investments are not used to provide self-sustaining income and profit, but to generate external benefits.

While the approach to reporting some aspects of conservation business, such as organisational objectives and financial position, can be achieved in the same manner as profit driven companies, there are some that cannot. The reporting of return on investment presents unique challenges for conservation businesses because their returns are not readily reportable in dollars, there are often complex risks that are unknown or not possible to assess, and there is often a long lag between the investment and delivery of the conservation outcome (i.e. the return). Despite these challenges, there is no reason why investor confidence cannot be raised through sound reporting practices in the conservation sector.

Bush Heritage Australia (BHA) is a well known private conservation organisation that invests donations into the acquisition and management of properties with high conservation value. BHA has long seen the potential of reporting to build investor confidence, however before investing in any new reporting process for investors, BHA made the decision to investigate and clarify the reporting preferences of different investors and an assessment of how best those reports could be delivered within the existing organisational framework.

This document is a synthesis of the resources, concepts, and approaches discovered during the investigation and new approaches that were developed where needed. This is all presented in the form of a guided process that is aimed at assisting other conservation organisations with the establishment of their own reporting processes to increase investor confidence.

Stuart Cowell (Project Director)

Bush Heritage Australia

Table of contents

Abbreviations and acronyms

ANU	Australian National University
BHA	Bush Heritage Australia
CMA	Catchment Management Authority
DEWHA	Department of the Environment, Water, Heritage and the Arts
LWA	Land & Water Australia
M&E	Monitoring and Evaluation
MER	Monitoring, Evaluation, Reporting
NGO	Non-government Organisation
NRM	Natural Resource Management
ROI	Return on Investment

Introduction

About the Increment project

The Investment in Conservation and Natural Resource Management Project (or Increment) project was a research and development project managed by Bush Heritage Australia (BHA). Funding for the project was provided by the Native Vegetation Program at Land & Water Australia (LWA) and the Department of the Environment, Water, Heritage and the Arts (DEWHA).

What is the purpose of this guide?

This document is a synthesis of the lessons learnt by the project team involved with the Increment research project. It is presented as guide to assist those in conservation and natural resource management organisations that want to design and implement a performance reporting and improvement framework to increase the confidence of investors.

The basic premise of the Increment project was:

While the focus of this guide is on reporting to increase external investor confidence, the process is structured to accommodate those organisations that already have a reporting framework that meets internal management needs and/or specific requirements established by funding bodies.

Who is this guide written for?

This guide will be of value to you if:

- ✓ you are looking for ways to maintain or increase investment in a conservation or natural resource management organisation from private or government sources
- ✓ you need to design a performance reporting framework for a conservation organisation, and /or
- ✓ you are interested in conservation Monitoring, Evaluation, Reporting (MER) that will lead to organisational self improvement.

The intended audiences are:

- private conservation organisations needing to maintain a private donor base

- regional natural resource management (NRM) body looking to diversify their income sources into non-government sources and/or report to the community
- state and Australian government environmental agencies reporting to treasury, and
- local government reporting to the community as the investors

How to use this guide

This guide presents a process to design and implement a performance reporting framework for a conservation or NRM organisation. The process is designed for implementation at the whole of organisational scale and accommodates reporting at multiple landscape and organisation levels.

The process has four phases, each with a number of steps. The process was designed with the benefit of hindsight from the learning of the Increment project and therefore does not represent the exact sequence that BHA went through. The process presented is linear, and no attempt is made to express the many possible returns to earlier steps that were necessary for BHA and are likely to be necessary for you.

The guide has the capacity to reduce the resources you require to design and implement your own performance reporting framework by providing:

- ✓ a sequence of steps involved in design and implementation
- ✓ advice on how to undertake the steps in the process
- ✓ the identification of existing resources to assist with steps
- ✓ detailed Advisory Notes for steps where needed (see for a list of these new resources), and
- ✓ a summary of BHA's experience with certain steps in the process to provide examples of outputs.

Like any process, this one has been designed with specific assumptions about who will be using it and their requirements. These include the following.

1. Your organisation has an existing reporting framework that may have been developed for internal purposes or to develop specific reports as directed by funders or auditors (please note it is still possible to use this guide if you don't have any reporting but it is written to accommodate organisations that do).
2. You need to develop this additional reporting capacity by using as much existing data as possible – i.e. there is not a significant new budget for data just to drive reporting for investor confidence.
3. You have some existing knowledge of MER terminology and basic concepts although a glossary is provided.

We suggest that in the first instance you familiarise yourself with the entire process and ensure that it suits your needs.

The structure of this guide

The guide is structured into a series of four phases, each containing a number of steps listed in Table 1. To supplement the guidance provided in this document, a series of advisory notes has been

developed. These notes provide more detailed advice on how to complete certain steps and are listed in

Table 2. All advisory notes are available from www.bushheritage.org.au/increment.

Table 1: The phases and steps in the process

Phases	Steps in the phase
Phase 1 – Before you start	**STEP 1**: Project set up and planning **STEP 2**: Run internal project information sessions **STEP 3**: Understand your existing reporting capability and processes
Phase 2 – Identify feasible performance reporting options	**STEP 4**: Develop an organisation outcome hierarchy **STEP 5**: Select the places in the outcome hierarchy where performance will be reported **STEP 6**: Set SMART targets for selected outcomes **STEP 7**: Identify viable options for performance indicators **STEP 8**: Develop preliminary reports
Phase 3 –Investor consultation and refinement of reporting	**STEP 9**: Prepare investor interview process **STEP 10**: Identify investor group representatives and conduct consultation
Phase 4 – Implementation of reporting	**STEP 11**: Building report processes into existing business procedures **STEP 12**: Monitoring and evaluating the impact on investor confidence **STEP 13**: Using the reporting for internal improvement

Table 2: Advisory notes developed for this guide

Title of advisory note	Description	Used in step(s)
An overview of performance reporting concepts for conservation organisations	• What is performance? • Challenges in conservation performance reporting • Analytical tools – e.g. ROI	1
How to develop an organisation outcomes model	• A brief guide to developing an organisation outcomes model	4 and 5
How to select performance indicators and set targets	• How to select potential indicators of performance • A viability assessment for conservation indicators • Making use of existing data and indicators first • How to set a SMART target • How to use the progress marker concept to set progressive targets	6 and 7
Presenting conservation performance reports for investors	• Structure • Language • Narrative versus analytical • Text versus graphs and photos	8 and 11
The role of evidence in delivering credible conservation performance reporting	• An introduction to evidence-based practice • Using performance reporting as an alert for learning opportunities • The importance of evidence to providing confidence in performance reporting	All steps, particularly 14

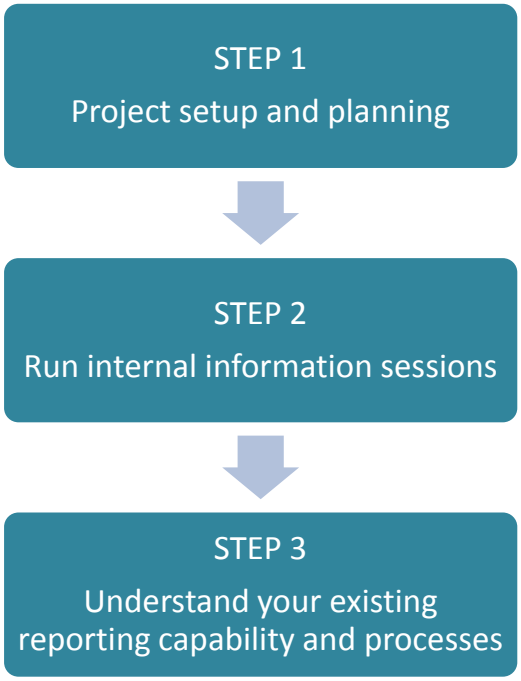
Phase 1 – Before you start

The design and implementation of conservation performance reporting is likely to be a significant undertaking for most organisations. What makes it significant is that it engages organisations in dialogue on core issues such as organisational objectives, how specific strategies contribute to those objectives and the specification of ways to measure performance.

If your organisation is in the position where its objectives are unclear or insufficient to describe the expectations of the organisation, or if there is little monitoring and reporting currently in place, the start up phase of the project will be all the more important. Although this appears to be a basic principal, surprisingly many organisations do not have a set of clearly defined outcomes.

The steps presented for Phase 1 are aimed at giving the development of your organisation's reporting framework the best chance of success. It includes providing staff with a minimum standard of understanding about performance reporting and early engagement of the people that will ultimately determine how successful the reporting framework is.

The steps in Phase 1 are:



STEP 1: Project set up and planning

Purpose of this step	To establish a project plan, including clear objectives that the reporting framework must meet.
Outputs of this step	1. Documented authorisation to develop a reporting framework 2. Documented governance arrangements 3. A reporting development and implementation plan 4. A project intranet site (optional)
Why is this step where it is in the process?	You will find that at almost every step of this process decisions are being made to allocate the limited reporting resources your organisation has, so the importance of having objectives established early cannot be overstressed. Early communication of opportunities stakeholders will have to contribute to the design of the framework will allay any internal concern about the 'new reporting project'. It is also important to show stakeholders that you have the relevant authorisation to begin this process.
Who this step will likely involve	▪ The core project team. ▪ Senior management.

Our suggested approach to this step

We are not going to advise you on how to be a good project manager here, but we have put together a list of important points that are based on our experience that will hopefully make your project run as smoothly as possible. Table 3 presents some suggested do's and don'ts for the start up phase of the project.

The phases and steps presented in this guide are our suggested order of tasks for a project plan. A checklist of additional information to include in your project plan is provided below.

- ☐ Drivers for the new reporting, including authorisation from the relevant level(s) of management.
- ☐ Clear objectives for the reporting framework.
- ☐ The scope of the new reporting – i.e. what sections of the organisation it will cover.
- ☐ An indicative budget range for the new reporting elements and whether that is to come from a new addition to or the existing reporting budget.
- ☐ A stakeholder engagement and communication plan.
- ☐ The tasks needed to design and test the reporting, based on the structure of this guide.

One other important consideration for your plan is the design criteria that can be referred to throughout the development t of the reporting framework. In a way, this guide comes pre-packaged with some design criteria that the process itself has been designed around. These include that the resulting reporting framework will be:

- **focused** on the organisation's aims and objectives
- **appropriate** to, and useful for, the stakeholders who are likely to use it
- **balanced**, giving a picture of what the organisation is doing, covering all significant areas of work

- **robust** in order to withstand organisational changes or individuals leaving
- **integrated** into the organisation, being part of the business planning and management processes, and
- **cost effective**, balancing the benefits of the information against the costs[1].

Table 3: Some points to consider and associated project do's and don'ts to assist project planning.

Lessons learnt about establishing performance reporting	Associated do's and don'ts
Developing organisation wide reporting of any kind is not a small undertaking, regardless of the size of your business.	DO take the time to plan the project properly. DON'T start this project without a clear plan and resources allocated to achieve it.
Recognise you are establishing measures of performance for staff in the business and they therefore have a large vested interest in the reporting established.	DO work into the project plan significant consultation with staff and management. DO ensure there is adequate representation of all business areas in the project governance structure. DON'T establish a small group and select performance indicators and report formats on your own.
Roll out of new reporting takes a high degree of organisation wide cooperation.	DO ensure you have, and can communicate, the required organisation authority to proceed with development and roll out of a new performance reporting framework. DON'T commence the development of a performance reporting framework without the required authority and support from management.
Some steps needed to establish useful performance reporting involve fundamental things such as having clear organisation objectives. Be prepared for these to take time.	DON'T start the project with unrealistic expectations of how long it will take to develop a useful performance reporting framework. DO recognise that getting these fundamentals right will not only increase the value of the reporting but also have broader organisational value. Give it time.
While this guide focuses on investor reporting, resources for reporting will be limited and it is likely the one performance reporting framework may serve several purposes.	DO establish clear objectives for the reporting in your project plan. DO agree on a budget for the reporting and if coming from an existing fully allocated budget agree on a portion that can be used to satisfy investor reporting needs. DON'T get to the end of developing the new reporting framework and realise you don't have the budget to roll it out.

[1] HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics 2001, 'Choosing the right FABRIC – A framework for performance information, HM Treasury, <http://www.hm-treasury.gov.uk/d/229.pdf>, accessed 8 May 2009.

Communication and engagement is the key to ensuring management are not concerned about having their unit performance measured and reported.	DO communicate clearly and often about the purpose of the reporting. DON'T spring performance indicators on managers and expect them to cooperate in developing reports.

Once your project plan is complete, consider establishing a project Intranet site if your organisation has one. You will then be able to refer to this in your information sessions that are discussed in the next step.

Resources and suggested reading

The following is a list of resources for use in this step.

HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics 2001, 'Choosing the right FABRIC – A framework for performance information, HM Treasury, <http://www.hm-treasury.gov.uk/d/229.pdf>, accessed 8 May 2009.

This document presents a framework for reporting performance information. While it is written for a government audience, the majority of concepts are relevant to non-profit organisations as well. This includes the use of the FABRIC criteria as outlined earlier in this section. This is a good reference to read before embarking on your own performance reporting project.

Silver MJ 2009, 'An overview of performance reporting concepts for conservation organisations', Bush Heritage Australia, Melbourne.

This is an advisory note developed to accompany this guide. It provides a summary of the basic concepts of performance reporting.

Australian National Audit Office (ANAO) 2004, *Better Practice Guide: Better Practice in Annual Performance Reporting*, Commonwealth of Australia, Canberra.

A guide developed to assist Australian Government organisations improve their performance reporting processes. As with other government guides, this has concepts of value to non-government organisations.

The BHA experience

- BHA has identified several areas of reporting needs consistent with the organisational Principal objects as identified the organisations' Constitution:

Principal Object	Performance Reporting need
to protect the natural environment for the long term through the acquisition and preservation of interests in or associated with land or water which is of high conservation value or environmental significance as determined by the Board;	• Internal management effectiveness reporting to staff and the Board • External outcome reporting to supporters
to preserve, restore or maintain the conservation value or environmental significance of the natural environment through the planned management of the Company's property;	• Internal and external outcome reporting
to obtain funds or other property through donations, bequests, public appeals, special events and from the corporate sector;	• External outcome and management effectiveness reporting to supporters and the community and corporate sector
to pursue business, sponsorship and other appropriate relationships with the public and private sector to achieve the objects of the Company.	• External outcome reporting to the community and corporate

	sector

- Until recently reporting has typically been ‘input’ and ‘output’ reporting. BHA has developed an outcome performance reporting approach for reporting at different levels within the organisations strategic plan – national, Anchor/regional, node/landscape and property/project level.
- A key driver for the Increment project was the recognition by BHA that performance reporting could be improved by linking investments (time and resources) to outcomes.
- BHA has incrementally been developing elements of what can become an outcome reporting framework with clear objectives, integrated action planning across different scales, staff work plans linked to organisational plans, data collection from monitoring of key indicators.

STEP 2: Run internal information sessions

Purpose of this step	To announce the start of the development of the reporting framework and clearly communicate the plan. By outlining the project plan, including opportunities for stakeholders to contribute, and presenting a basic presentation on performance reporting, internal stakeholders will feel at ease with the project. It can also be used as an opportunity to gain internal comment on the project plan, including sufficiency of consultation.
Outputs of this step	1. Presentations. 2. Hardcopy hand outs about the project and performance reporting basics. 3. A collection of resources for use throughout the project.
Why is this step where it is in the process?	A performance reporting framework has implications for all staff. You must communicate early and often to ensure people understand the purpose and progress of the project. Starting the project with common expectations will give the project its best chance of success.
This step will likely involve	▪ The core project team ▪ All organisational staff

Our suggested approach to this step

Usually business development projects of this scale and nature will be announced internally. We suggest running internal information sessions about the project that include communication of:

- ✓ the core project team and the roles they are fulfilling
- ✓ project drivers
- ✓ a statement of support from executive level management, perhaps outlining its strategic importance to the organisation
- ✓ performance reporting basics, including some tangible examples of performance reports (refer to advisory note in resources)
- ✓ project objectives
- ✓ the scope of the reporting, including the parts of the business are included
- ✓ an overview of the project plan and how it was developed
- ✓ consultation opportunities, including a request for feedback on whether it is sufficient, and
- ✓ where staff can get more information and who they can contact with any enquiries.

In addition to a presentation that covers these issues you might consider providing the following hardcopy material:

- an outline of the project plan, and
- the basics of performance reporting for conservation organisations – an advisory note 'An overview of performance reporting concepts for conservation organisations' is available to assist with this task.

Resources and suggested reading

The following is a list of resources for use in this step.

Silver MJ 2009, 'An overview of performance reporting concepts for conservation organisations', Bush Heritage Australia, Melbourne.

This is an advisory note developed to accompany this guide. It provides a summary of the basic concepts of performance reporting.

The BHA experience

- The Increment project has increased the awareness of the need and importance of sound monitoring, evaluation, reporting and improvement (MERI) processes. BHA has developed a draft MERI framework in consultation with technical and management staff. The objectives of the framework are:
    - To provide the BHA board of directors with a means to track the performance of all areas of the organisation,
    - To increase the confidence of BHA investors by improving their access to performance reporting, and
    - To facilitate internal adaptive management and improvement.
- The finance and fundraising areas already have well developed tools and methods for reporting that are also regulated, i.e. audits, annual reports. The MERI framework being developed will assist in developing tools for integrating conservation reporting with finance reporting in a quadruple bottom line (ecological, operational, social and cultural) approach. It is recognised that all areas of the business are important to consider in performance reporting. Ultimately BHA aims to have conservation and finance reporting with similar rigour and audit requirements.

STEP 3: Understand your existing reporting capability and processes

Purpose of this step	This step will ensure the core project team is reliably informed about the monitoring and reporting that is already occurring within the organisation. This is important for the following reasons. ✓ Those who prepare reports are often unaware of the importance and nature of monitoring data collected within the organisation. ✓ Working in with existing data and reporting processes is the best way to achieve cost effective performance reporting. ✓ The staff already preparing reports are likely to be those you will rely on to roll-out any new reporting - it is a good idea to engage with these knowledgeable people early. ✓ It is an opportunity to reassure staff that your project will be consultative. ✓ It will assist the selection of viable and cost effective reporting options and engage those knowledgeable people already undertaking reporting early in the process.
Outputs of this step	1. A map of the existing reporting processes. 2. A list of any existing reporting development projects.
Why is this step where it is in the process?	One of the most important considerations in change management is to engage early with those involved in delivery of the existing process. It is also important to ensure you are not running over the top of any existing processes that are underway. Doing this step early will also ensure you keep existing capability in mind throughout the project, which is perhaps the most important way to keep costs of the new reporting within budget.
This step will likely involve	▪ The core project team. ▪ Reporting representatives from business units.

Our suggested approach to this step

Once you have your core project team in place, consider asking a representative from each area of the business to attend a workshop about the existing reporting they do. In that workshop, document any information provided about monitoring that provides data, analysis of data and reporting already in place, including the audiences of those reports. This information will be invaluable throughout the reporting design process.

It is useful to think of the data as the ingredients that we have to work with for reporting. We can combine these ingredients in different ways or modify them through analysis and interpretation to produce different products.

While we suggest consulting with more representatives of business units in later consultation, it is important to engage with existing reporting representatives at an early stage in the project. It is these staff members that will ultimately determine the success or otherwise of the new reporting.

It is helpful when characterising existing reporting to deal with individual reports, not whole programs. By focussing on an individual report you can clearly specify the process by which the report is generated. The three main steps of report generation are data collection, data analysis, and report presentation, as illustrated in Figure 1.

Figure 1: The primary steps of a reporting process

For each of these main steps we suggest collecting the information listed below. While this may appear to be a lot of information, consider the fact that by doing this you may save new data, analysis and reporting processes that will run over many years. It is also the sort of information that your organisation will find useful for other purposes.

Data collection

- What business unit(s) collects the data?
- What question does the data aim to answer?
- What is the nature of the data collected and what units is it in?
- Who collects the data?
- How often is it collected?
- At what sites is the data collected?
- What limitations does the data have?

Data analysis and commentary

- What analysis is conducted on the data?
    - At what scale is the data represented?
    - Is the data combined with other data during analysis?
    - How often is the analysis conducted?
- What confidence can be placed on the data?
- What commentary is developed to accompany analysis?
- Who does the analysis and commentary?

Report presentation

- In what report/s is the analysis presented?
- Who develops the report/s?
- Who receives the report/s?
- How often is the report/s developed?

There are a number of issues that would be useful to discuss and establish with the business unit representatives while they are together. Here is a starting list of topics for discussion:

1. How are they coping with current reporting requirements?
2. Are there any areas of existing reporting that they cannot see value in? i.e. identify any opportunities for removing non-valued reporting.
3. How much does each business unit already spend on reporting?
4. Review the engagement strategy. Are there any steps they would particularly like to be involved?
5. Are there particular tools that they know of that could assist their reporting efficiency?
6. Are there particular reports that they think would be useful for their internal purposes that may be worked into this new process?
7. Do they have any reporting development projects underway?

The BHA experience

- BHA like other NGOs is conscience of maximising the use of funds for on-ground outcomes consistent with the organisational objectives. The development of a reporting system therefore needs to be as efficient and effective as possible with the minimum resources required for the on-going administration of the system. It has been critical therefore to establish the current capacity for reporting and matching this with the key needs.
- BHA has invested (with support from donors) in training of all project staff in project management and reporting methods to ensure consistency across all internal teams.

Phase 2 – Development of feasible reporting options

This phase of the project is about developing a set of feasible reporting options including indicators, analysis and presentation. Consultation with investors to establish reporting that will deliver the desired increase in confidence is essential, however it is not feasible for the process to be open ended in that investors provide a 'wish list' of reporting needs. It is therefore important that investors are presented with a range of options that fit within the scope and ability of the organisation's core objectives and available resources. Hence this phase is conducted prior to the consultation.

The best way to consult with investors is to have a set of reporting options that you already know are feasible within the organisation based on the data and resources you have. This way you will not be promising reports that cannot be delivered. The steps below take you through a process of establishing viable reporting options to present to internal and external stakeholders.

The steps in Phase 2 are:

STEP 4: Develop an organisational outcomes model

Purpose of this step	This step sets the framework for establishing the organisation's required performance indicators. Without the setting of expectations there is no way to evaluate performance. Prior to reporting on performance, it is important that your organisation has clearly defined objectives established at all levels of the organisation.
Outputs of this step	1. An evidence based outcomes model at the organisational level that links operational structures such as strategies/programs to the high level organisational objectives. 2. One or more evidence based logics defining the detail of the operational structures such as strategies/programs and that are nested within the organisational level outcomes model.
Why is this step where it is in the process?	The development of an organisational outcomes model and more detailed logics at the sub-organisational level is an important first step to the selection of performance indicators. It will engage your organisation in reviewing its core objectives at each level of the organisation and link activities to outcomes, thus identifying the potential places for performance to be measured. The process, when undertaken in a participatory fashion, also engages staff and enables them to see where their role fits into in the bigger picture of the organisation.
This step will likely involve	▪ All organisational staff. ▪ The core project team. ▪ Executive management. ▪ Board.

Our suggested approach to this step

Outcomes models, Program logic, Logframes, Intervention logics and Results chains are all names given to similar approaches that aim to make explicit the way activity within an organisation conceptually contributes to its objectives. Critically for evaluation, well constructed logics can be used to show the contribution of lower level outcomes or activities to higher level outcomes. In performance reporting this concept of contribution is important as the notion of 'achievement' is often attained through the contribution of our investment efforts but also through a range of other factors outside the influence of our investment.

In the context of a performance reporting framework these approaches can achieve two important things:

1. they can be used to establish the expectations (written as outcomes) at all levels of the organisation and landscape where performance can be measured, and
2. by documenting the cause and effect relationships a set of assumptions is established that represents organisational understanding. This understanding can be tested using currently available evidence and updated as the organisation learns by doing. Please refer to the Advisory Note on Evidence Based Practice for more discussion of this point.

Outcomes models document the rationale behind a program – what are understood to be the cause and effect relationships between program activities, outputs, intermediate outcomes and ultimate outcomes. Represented as a diagram or matrix, program logic shows a series of expected consequences, not just a sequence of events. In this instance the term 'program' can refer to multiple levels including interventions, projects, programs, strategies, plans or whole organisational structures.

Outcomes models can be viewed as a form of program design clarification, which can be used both in a formative sense (design or re-design) and in summative evaluation (testing the model). In planning it can be used to evaluate or clarify the logic of program interventions, often when the program is in development or re-development. In evaluation it can provide a framework to monitor and evaluate the performance of a program or strategy.

Ideally outcome models would be developed during the development phase of a program, and refined as often as practical to reflect new understanding. In this way it becomes an integral tool for adaptive management, and is updated as new knowledge comes to hand. However, they can also be developed for an existing program, and can help clarify the 'theory of change in use'.

While it is possible for one person to develop a model based on program documentation, their own experience and knowledge, and research on other programs, there are enormous benefits in developing models in a team. These benefits include:

- ✓ helping the team to gain a shared vision of what the program is trying to achieve
- ✓ gaining a shared understanding of how various sub-programs might fit together to bring about overarching outcomes
- ✓ helping staff understand how their work fits in with the bigger picture, and
- ✓ providing a better possibility that any action taken will be more likely to be understood and shared because the team has jointly identified those areas of the program plans that need to be re-designed.

Ideally the process would be facilitated by outcomes model experts to ensure that a robust process is followed and so that organisational learning and cultural change occurs. The mindset required for developing and embracing outcomes models often requires some organisational cultural change and a professionally delivered process assist with this change.

Depending on whether your organisation has an existing outcomes model in place and clear objectives exist for the whole organisation and strategies/programs, this step may take a long or short time to complete. An Advisory Note has been developed specifically to provide more detailed advice on how to complete this step.

Resources and suggested reading

The following is a list of resources for use in this step.

Richards R 2009, 'Developing organisational outcomes models', Bush Heritage Australia, Melbourne.

This is an advisory note developed to accompany this guide. It provides guidance on how to develop organisational outcomes models that are then used in later steps to select performance indicators.

Silver M 2009, 'The role of evidence in delivering credible conservation performance reporting', Bush Heritage Australia, Melbourne.

This is an advisory note developed to accompany this guide. It provides a discussion of how evidence based practice can be used to improve the credibility and learning utility of performance reporting in conservation organisations.

Hockings M, Stolton S, Leverington F, Dudley N and Courrau J. 2006, *Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd Edition.* IUCN, Gland Switzerland.

This provides a management effectiveness cycle that can be used as a basis for evaluating the effectiveness of conservation actions. This is useful when working out how to establish the linkages between your organisational outputs and conservation objectives in your organisational outcomes model.

DoView software – www.doview.com

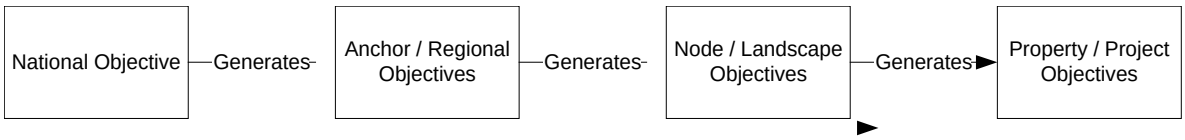
This is a piece of software that can be used to document outcomes models. It has been used throughout the Increment project.

Roughley A 2009, 'Developing and using program logic in natural resource management', Commonwealth of Australia, Canberra.

A guide to the use of program logic in NRM. Provides valuable advice on how to develop logics. See http://www.nrm.gov.au/publications/books/pubs/meri-program-logic.pdf

The BHA experience

- With assistance from the Increment project BHA has developed an outcomes hierarchy that forms the basis of a monitoring, evaluation, reporting and improvement framework that BHA has developed. The outcomes hierarchy is guided by a hierarchy of objectives that describes the scales of operation of the organisation as seen below.



- BHA has formally adopted a conservation planning tool consistent with the Open Standards for the Practice of Conservation (http://www.conservationmeasures.org/CMP/)
- BHA has established a planning hierarchy from national to local scale, linking inputs and outputs at each scale in a formal logical way
- The BHA strategic plan provides the basis for documenting how the outcomes at each level will be achieved.
- Organisation now has solid internal logic linking strategy (through objectives at each scale) to outputs (monitoring at each scale) and outcomes (using a logic to link them)
- The internal structure within conservation team reflects WCPA management effectiveness framework which is also linked to the Open Standards framework

STEP 5: Select the places in the outcomes model where performance will be reported

Purpose of this step	This step will identify what inputs, outputs or outcomes will be monitored for performance.
Outputs of this step	1. A set of performance questions that relate to the achievement of different components of the organisation outcome hierarchy.
Why is this step where it is in the process?	Now that the outcomes model of the organisation has been documented, the points in the results chain where performance can, and would be most beneficial to be reported must be selected prior to the selection of indicators.
This step will likely involve	▪ The core project team. ▪ Representatives of organisation sections.

Our suggested approach to this step

This step involves short listing places in the outcomes model that you consider necessary for reporting performance. By doing this you are defining the specific performance questions that the reporting will answer. The key performance question that we are interested in is:

'To what extent have we achieved the expected results?'

The expected results in this case are each outcome presented in the logic.

There are a lot of things to consider when selecting appropriate places in the outcomes model to report on performance. The following is a summary of relevant points deduced from BHA stakeholder interviews.

1. Reporting on the organisation level objectives are a given; these must be included in any reporting framework.
2. Do the points in the outcomes model relate to business units that will be useful for internal needs?
3. Keep in mind that investors without a technical conservation background will be interested in ecological outcomes at tangible scales. For example, IBRA regions are unlikely to mean anything to people outside the conservation sector, however a change in the threat posed by a pest animal at a property will make sense regardless of your background.
4. Most investors will be interested in more than technical ecological outcomes. Those investors that don't understand ecological measures will use other indicators to determine organisational competence. For example, for private conservation organisations this will include the financial state of the organisation. Is the organisation still financially viable?
5. Most investors will not be interested in performance of individual projects, although it may be necessary to collect data at to allow for higher level reporting.
6. Remember that investors may have an affinity with a particular type of landscape or part of the country.

The BHA experience

- Conducting a survey of stakeholder reporting preferences together with the development of outcomes models making the relationships between expected outcomes at each scale of BHA operations explicit, enabled BHA to visualise where it is most important to focus performance monitoring. For example the need for reporting on reserve level outcomes was clearly recognised as being important for reporting to the Board, all groups of supporters (investors) and internally to improve management effectiveness.

- The process also aided BHA is realising that all aspects of the business are ultimately designed to achieve their vision, which relates to conservation outcomes. BHA recognized that to achieve the conservation vision, they require contributions from different parts (themes) of the organisation, analogous to a 'quadruple bottom line' approach:

✓ Ecological (Environmental): conservation values that are the target of our work
✓ Operational (Economic): inputs required to achieve our conservation goals
✓ Social (Community): stakeholder engagement to sustain our work
✓ Cultural (Indigenous): recognition of cultural heritage and values

- BHA has made a shift from largely input and output reporting to an integrated reporting approach based on targeted needs at different scales of the organisations operations.

STEP 6: Set SMART targets for selected outcomes

Purpose of this step	This step involves setting SMART targets for the selected outcomes that an organisation wishes to report on. This establishes the expectations required to assess performance against actual results.
Outputs of this step	1. SMART target(s) for each selected outcome.
Why is this step where it is in the process?	Having selected the outcomes within the logic that you wish to report on, it is appropriate to set some quantifiable measures of expectation for these outcomes. Once these have been set the indicators to measure progress towards these targets can be selected.
This step will likely involve	▪ The core project team. ▪ Business unit representatives or whole business units.

Our suggested approach to this step

- ✓ Use the logic outcomes as the basis for the target. The logic outcome provides the subject matter or topic for the target.
- ✓ Where possible use available evidence and expertise to assist with defining the target quantification (or qualification if the target is qualitative in nature). Available evidence would include the use of empirical models or existing data. It is important to, where possible, consider thresholds of change – how much is required in order to achieve a result that is desirable or can it have a demonstrable contribution to a higher level outcome.
- ✓ Consider setting a target range rather than an absolute point. The target range can be bounded by the minimum result required and the maximum expectation of the result.
- ✓ Using the logic outcome that you wish to set a target for, firstly decide on the timeframe for the target. This will depend on factors such as the spatial scale of the expected outcome. Often change at points of investment will take less time than change at larger scales.
- ✓ Set incremental targets at realistic time intervals along the desired trajectory of change for the end outcome. For example you may set landscape function targets at 2, 5, 10 and 15 years at a whole of property scale.
- ✓ Ensure that the target is SMART.

Resources and suggested reading

The following is a list of resources for use in this step.

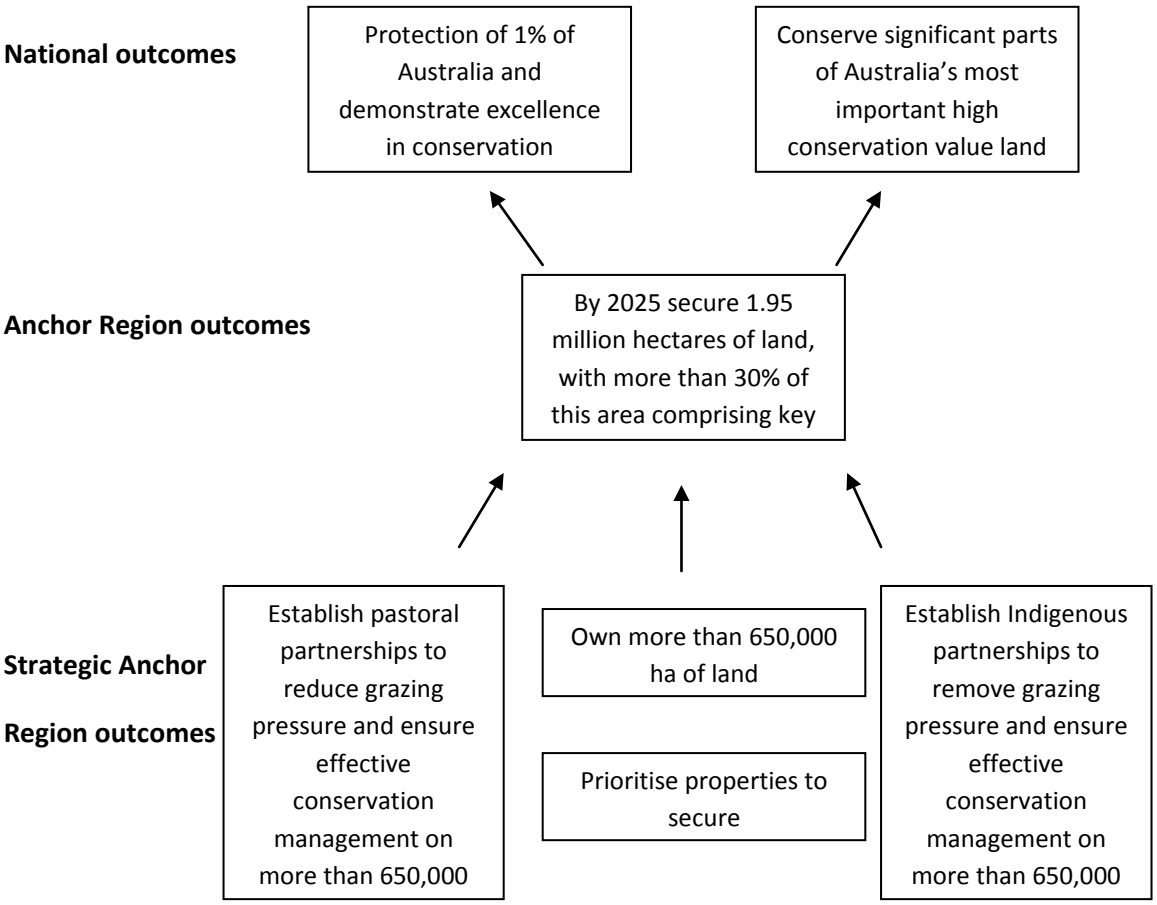
Richards R 2009, 'Setting SMART targets and selecting performance indicators'

This is an advisory note developed to accompany this guide. It provides guidance on how to set targets that meet the SMART criteria and also selecting performance indicators that are cost-effective for your organisation.

The BHA experience

- With assistance from the Increment project BHA is continuing to "sharpen" it's objectives at each scale of operation within the organisation. SMART targets have been set for example at the Anchor/regional level that contribute to the achievement of the national objective.

Below is an example of how Queensland Upland and Brigalow Belt Anchor Region outcomes contribute to the national BHA outcomes



STEP 7: Select viable performance indicators

Purpose of this step	Now that the places in the outcomes model have been selected for monitoring, the indicators used to assess performance must be selected. For some outputs, these will be simple counts, however for other outcomes, indicators will have to be selected. The viability of potential performance indicators will also be assessed. This will involve an assessment of the data collection process against the available budget. By doing the viability assessment now it ensures that reports put to stakeholders for consideration are possible to deliver.
Outputs of this step	1. Viable performance indicators associated with each performance question.
Why is this step where it is in the process?	
This step will likely involve	▪ The core project team. ▪ Representatives from business units.

Our suggested approach to this step

Criteria used to select performance indicators would include:

- ✓ **relevant** to what the organisation is aiming to achieve
- ✓ **easily understood – the indicator can be easily communicated and understood**
- ✓ able to **avoid perverse incentives -** not encourage unwanted or wasteful behaviour
- ✓ **attributable –** the activity measured must be capable of being influenced by actions which can be attributed to the organisation; and it should be clear where accountability lies
- ✓ **well-defined** - with a clear, unambiguous definition so that data will be collected consistently, and the measure is easy to understand and use
- ✓ **timely,** producing data regularly enough to track progress and, and quickly enough for the data to still be useful
- ✓ **reliable** - accurate enough for its intended use, and responsive to change
- ✓ **comparable** with either past periods or similar programmes elsewhere, and
- ✓ **verifiable**, with clear documentation behind it, so that the processes which produce the measure can be validated[2].

Resources and suggested reading

The following is a list of resources for use in this step.

Richards R 2009, 'Setting SMART targets and selecting performance indicators'

This is an advisory note developed to accompany this guide. It provides guidance on how to set targets that meet the SMART criteria and also selecting performance indicators that are cost-effective for your organisation.

[2] HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics 2001, 'Choosing the right FABRIC – A framework for performance information, HM Treasury, <http://www.hm-treasury.gov.uk/d/229.pdf>, accessed 8 May 2009.

Leslie S 2009, *Enhancing not-for-profit annual and financial reporting*, Institute of Chartered Accountants in Australia, Sydney.

Provides a suggested list of financial performance indicators particularly relevant to non-profit organisations. May also be of value to government organisations looking to be transparent about the administrative costs of on-ground actions.

Various documents of the Global Reporting Initiative < www.globalreporting.org>

Provides suggested indicators for sustainability reporting including social and environmental areas.

HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics 2001, 'Choosing the right FABRIC – A framework for performance information, HM Treasury, <http://www.hm-treasury.gov.uk/d/229.pdf>, accessed 8 May 2009.

This document presents a framework for reporting performance information. While it is written for a government audience, the majority of concepts are relevant to non-profit organisations as well. This includes the use of the FABRIC criteria as outlined earlier in this section. This is a good reference to read before embarking on your own performance reporting project.

Lockwood M, Davidson JL, Griffith R, Curtis A and Stratford E 2008, 'Pathways to good practice in regional NRM governance: Project summary and achievements. Report No.6.', University of Tasmania, Hobart, Tasmania.

This summary of the Land & Water Australia project into regional NRM governance provides information on the aspects of governance that are important. The can be used as a basis for selecting performance indicators in the area of organisational governance. See http://eprints.utas.edu.au/8417/.

The BHA experience

DRAFT - This section is to be completed by July 2009.

- While BHA is currently in the process of setting "program performance indicators" (indicators of the efficiency and effective of BHA systems and processes), indicators for the Ecological Outcomes Monitoring Program have been developed.

STEP 8: Develop preliminary reports

Purpose of this step	To ensure you consider all the communication variables that will impact on the use of the reports, such as structure, style, layout, use of text versus photos, narrative versus quantitative. To develop preliminary reports for use in the investor consultation. To ensure that all the previous options selected come together in a physical report.
Outputs of this step	1. Preliminary reports.
Why is this step where it is in the process?	▪ Developing preliminary reports is a tangible way of ensuring that all the reporting options you have worked through in Phase 2 are going to lead to useful reporting. It gives the people involved in this phase a tangible finishing point. ▪ To date in the process there has been no consideration of communication options. This is critical to the success of the reporting, particularly when the external audience is not likely to have a scientific background. It is important that these options are also considered as part of Phase 2. ▪ Preliminary reports are required to conduct investor consultation in Phase 3.
This step will likely involve	▪ The core project team. ▪ Designers.

Our suggested approach to this step

An Advisory Note, 'Presenting conservation performance reports to investors' has been developed to assist you with this step. There is little information (available in other resources) that is focussed on conservation reporting, although there are good resources available to assist for-profit entities present reports, particularly annual reports.

We suggest using the Advisory Note to familiarise yourself with the various aspects of report presentation. It is a critical part of effective reporting since poorly structured or presented reports can significantly reduce their use by the target audience.

If your organisation has in-house design experience you might decide to construct these preliminary reports internally. However they are an important part of the stakeholder consultation, so if internal design talent is unavailable it would be worth spending some of your available resources on these reports, even if you decide to only consult internally. It may well be that at least portions of these designs can be used in formulating the final product so it will not be wasted.

Think carefully about the preliminary reports you develop. Develop them with enough difference so that it will elicit clear preferences as opposed to simply producing reports that you think will be best.

Resources and suggested reading

The following is a list of resources for use in this step.

Silver M 2009, 'Presenting conservation performance reports for investors', Bush Heritage Australia, Melbourne.

An advisory note to accompany this guide, the document focuses on the structure and presentation of performance reports and how that can affect its value to the organisation. Includes discussion on narrative versus analytical language and the use of text, photos and graphs.

The BHA experience

The Australian National University (ANU) team developed some preliminary reports for the BHA stakeholder consultation. They intentionally developed different types of reports o to assist elicit conservation investor preferences. For more about the stakeholder methodology see Phase 3 below.

Figure 2 shows two example preliminary reports that were developed for the BHA stakeholder consultation.

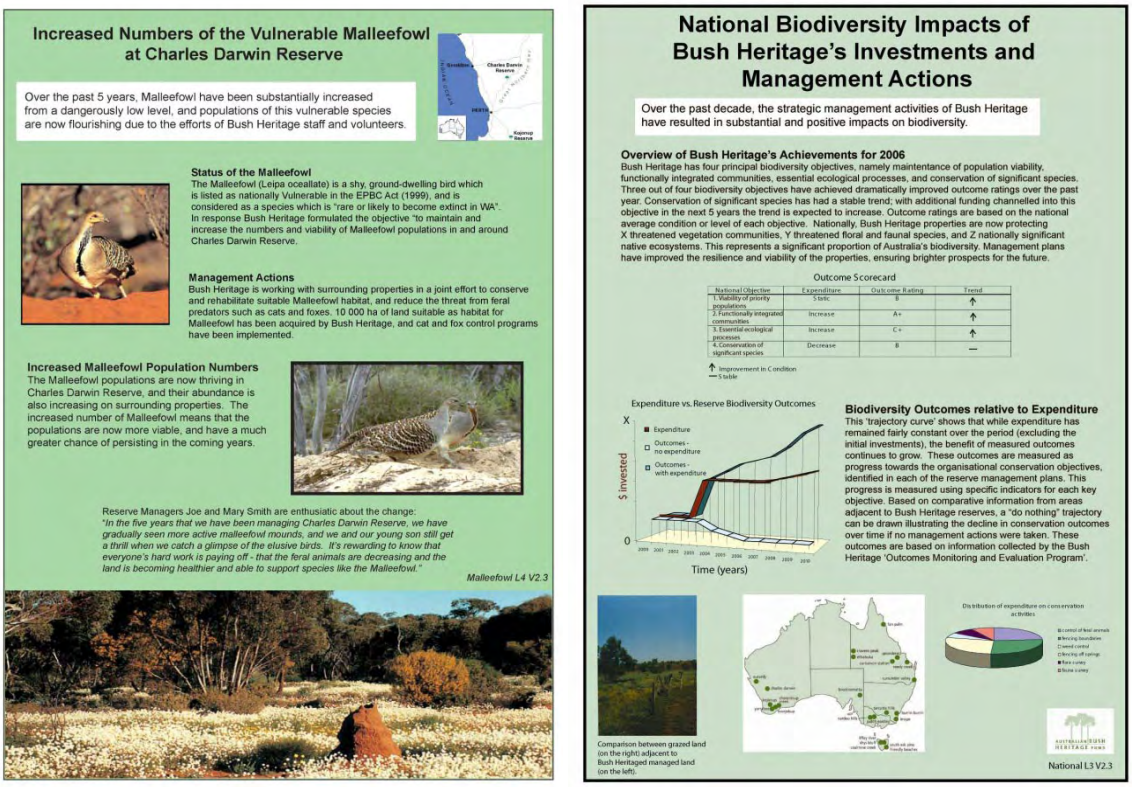


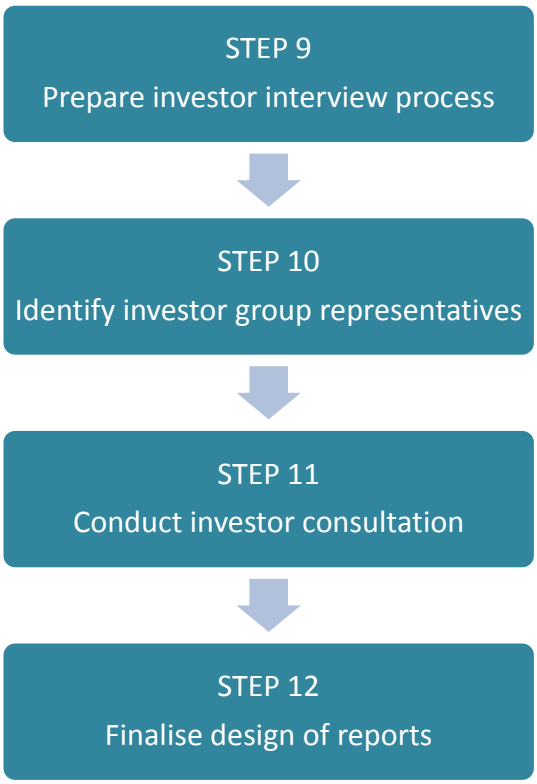
Figure 2: Two example preliminary reports developed for the BHA stakeholder consultation.

Phase 3 – Investor consultation and refinement of reporting

IMPORTANT: If you have a very limited budget for development of your performance framework you may decide to not invest in this phase of the process. All the relevant findings from the BHA stakeholder consultation are presented in the relevant steps of this guide and that may well be sufficient to design your reporting. Reports can then be modified based on feedback from stakeholders.

If you decide to invest in this phase it will assist you to conduct consultation with your own reporting audience. It is also likely to assist you to refine your reporting designed in Phase 2 and make informed selections of content and communication.

The steps in Phase 3 are:



STEP 9: Prepare investor interview process

Purpose of this step	To prepare the process to conduct the investor consultation.
Outputs of this step	1. An interview process.
Why is this step where it is in the process?	The reporting options are available from phase 2.You now need to develop an interview process to elicit the preferences of your report audience.
This step will likely involve	▪ The core project team. ▪ Marketing consultants (optional).

Our suggested approach to this step

As part of this project, ANU was engaged to elicit reporting preferences from BHA stakeholders. This approach resulted in many important findings that have documented throughout this guide; however it is of course not the only way to conduct stakeholder consultation on this issue.

If you have the budget available to do so, you may like to consider engaging marketing consultants to undertake the majority of this phase. In such cases the advice in the steps of this phase should be able to reduce the costs involved.

A list of issues to discuss with investors was one output of a review ANU conducted on existing frameworks that deliver conservation outcome reporting. The list is presented in Table 4.

Table 4: List of data to be collected from stakeholders, organised by theme

Theme	Information to be elicited
Content	1. Scope (biological, social, process – all or selective). 2. Spatial scale of information (national, property). 3. Level of detail (comprehensive, summary). 4. Timing of information (project 'developmental', project 'conclusion'.) 5. Source – from outcomes monitoring program, or whether additional information will need to be gathered.
Presentation	1. Style of information (text, statistics, pictures, graphics). 2. Method of presentation (paper, online). 3. Frequency of reporting (annually, monthly etc).
Context	1. Understanding of BHA's objectives and methods. 2. Motivation for support. 3. Expectations of BHA. 4. Preferred level of engagement with BHA.

The method explored these issues through a series of 13 questions to guide the interview and focus workshop discussions. These questions are listed below.

‘Context‘ questions

1) What do you think BHA is trying to achieve in relation to conservation?

2) Why do you support BHA?

3) How confident are you that BHA is achieving its conservation objectives?

4) Do you think management of individual properties is important for achieving conservation goals on BHA properties?

5) What do you understand by the term ‘biodiversity’? (For example, lots of different species, healthy habitats, variation among living organisms, other)

6) Are you interested in receiving any kind of information (For example, in the newsletter, emails, reports, website updates) on a regular basis about BHA’s progress in meeting its conservation goals?

a) Not interested
b) Moderately interested
c) Very interested
d) Need more information before making a decision

7) Why are you / aren’t you interested?

‘Information Content’ questions

8) At what scale(s) would you find information most useful and interesting?

a) at a project level (e.g. ‘The Brown Treecreeper Conservation Project’).
b) at a property level (e.g. progress on meeting conservation goals for Carnarvon Station Reserve).
c) at a regional level (e.g. information about all the properties in a bioregion).
d) at a national/organisation level.

9) Are there certain types of information that would increase your confidence that BHA’s conservation objectives are being met? Can you give examples of the kind of information you would find useful and describe why you would like to receive this information?

10) Would you find information on the social aspects of BHA’s work useful? (e.g. information about the organisations it is forming partnerships with; the people who do volunteer work; the affect BHA is having on raising community awareness and education; the kinds of visitors who are coming to BHA properties).

‘Presentation of Information’ questions

[Use the preliminary information products to ask the following questions]

11) Do you have a preferred style for presentation of conservation information?

a) Can you give us your reasons for this (e.g. easier to interpret)?

i) photos/pictures
ii) text
iii) statistics, graphs
iv) maps

b) Would you prefer a simple 'story' that explains the conservation outcomes achieved, or would you prefer more detail such as pertinent modelling results (perhaps use the information hierarchy diagram to help with this question)

c) How much 'context detail' would you like included to help explain the conservation outcomes (i.e. objectives, rationale, inputs/outputs)?

12) Would you like conservation reports to cover a large time period (e.g. the past 5-10 years), or concentrate on most recent achievements (e.g. this year), or also include predictions for the future?

13) Are you interested in being part of the reference group for product development? This would involve a minimal amount of your time, and would provide valuable feedback on the impact and effectiveness of our reporting product.

Resources and suggested reading

The following is a list of resources for use in this step.

Mackey B, Sobey E, Letcher RA and Cuddy SM 2007, *InCReMent Phase 1: Design & Feasibility*, Report to Australian Bush Heritage Fund, Fenner School for the Environment and Society, The Australian National University, Canberra.

This document provides additional details on the approach to stakeholder engagement explained above.

The BHA experience

Consultation with BHA investors and other potential report audiences was conducted by ANU. The following provides an overview of the method used.

Data collection and analysis methods

A quantitative analysis of needs and preferences requires that considerable attention be given to the preparation of presentation material (e.g. preliminary reports, storyboards) that users can score in some way. It is also usually iterative, i.e. preferences are refined through cycles of interaction, with users preferences fed back to them by way of revisions of preliminary material. An early decision was made that this approach would be too prescriptive at this time in the life of the project and that a qualitative analysis would be sufficient. This decision influenced the style of interaction with stakeholders and the type of material prepared.

Four standard methods were considered, namely:

- review of existing documentation
- survey by questionnaire
- interview, and
- focus groups.

A review was conducted as part of the literature review and is described elsewhere.

Primarily because of the decision to proceed with qualitative analysis, the effort and time required to design, implement and analyse a questionnaire style of online and/or paper-based survey (which is a primary data collection method for quantitative assessment) was judged to not be the best investment of resources.

The team used a combination of interviews and focus groups to elicit information. Focus groups were used for small donor elicitation, while interviews were used for all other information stakeholder groups. These were conducted in a semi-structured format to avoid biasing the data and to allow a wide range of information to be gathered. For consistency, the same set of information aids was used for both methods.

A set of thirteen open-ended questions formed the basis for most of the interviews (see Step 9 for a list of the questions). The questions focussed on eliciting content and providing some context. Presentation preferences were elicited somewhat indirectly with the aid of eight 'preliminary reporting products'. These products were single page hard-copy examples of the level of detail that could be included in a report, and of the different styles that information could be presented in. The information used in the preliminary reporting products was hypothetical, however it was based on BHA's objectives and reserves. The products reported examples from different biodiversity organisational levels (population, community, and ecosystem) at Level 3 (modelled or ranked results) and Level 4 (story or narrative) of the information. Samples are included in an Appendix to this report.

The engagement program

The engagement program was built around the availability of stakeholders and project staff within a three month period. Fifty-nine individual BHA information stakeholders were interviewed, with each interview lasting between approximately 45 minutes and two hours. Due to time restrictions on a small number of the interviews, not all questions could be asked at each interview. Table 5 provides a summary of the engagement program.

Table 5: BHA stakeholder groups interviewed, number of interviews and number of participants.

Stakeholder Class *		**Number of Interviews**	**Number of Interviewees**
Government Investors		1	1
		1	3
Small Investors		2	20
Philanthropic Investors		19	19
Non-government Organisations		1	1
NRM Organisations	CMAs/Regions	1	2
	Policy Officers	1	7
Internal BHA staff	Ecology team	1	5
	Reserve manager	1	1
SUM		**28**	**59**

* For reasons of privacy and confidentiality, the names of the interviewees and the particular organisation or department for whom they are employed are not revealed.

Methods of analysis

The form of stakeholder-needs elicitation precluded any form of statistical analysis of the results due to the:

- semi-structured format of the interviews
- uneven sample size (different numbers of respondents in each stakeholder group)
- different treatments (not all of the ten questions was asked at each interview), and
- different interview methods (one-on-one, small group, workshop).

Results were instead analysed by drawing out the major themes from the interviews at different levels of stakeholder aggregation. This was appropriate for the survey type, and allowed different levels of detail to be explored and evaluated. Thesteps used within the interview analysis are listed below.

Step 1: Compilation of interview transcripts according to their stakeholder group.

Step 2: Identification of the major themes and variation around these themes within each set of questions, for each stakeholder class.

Step 3: Identification of broad stakeholder groups (where a group is made up of two or more stakeholder classes) based on similarities in the major themes.

Step 4: Application of the findings of the previous steps to the development of a reporting tool for BHA.

STEP 10: Identify investor representatives and conduct consultation

Purpose of this step	To identify a list of potential investor representatives for consultation on the new reporting options.
Outputs of this step	1. A list of investor representatives to consult with.
Why is this step where it is in the process?	Representatives of investor groups and potentially other report audiences need to be selected prior to consultation occurring.
This step will likely involve	▪ The core project team ▪ Internal staff that service donors or manage relationships with other funding providers

Our suggested approach to this step

In the first step of this guide we suggested that you clearly identify the likely users of the new reporting. While this guide has special consideration for the use of reporting for investor confidence, you may well need to include other stakeholders in your consultation. There may also be segments within your investors that you wish to particularly ensure representation from in order to elicit preferences.

The BHA experience shows that preferences from within the reporting audience can be quite different. Think carefully about how you are going to select those you invite to participate in consultation sessions. The following questions are designed to prompt thought on which groups to target consultation with.

1. Do you want to find out what increases confidence in those providing small amounts of funding to your organisation, or large amounts?
2. Do you really need to consider the needs of government funders if they already specify their reporting needs as a condition of funding?
3. Are other conservation organisations potential financial partners? Would reporting focussed at them increase the future chances of co-investment?
4. Would it be useful to engage with funders who don't currently fund your organisation?
5. Are your board members potential key users of performance reporting?
6. What level of conservation knowledge does your target audience have? Are people that have little idea of conservation science your main funders?

Resources and suggested reading

The following is a list of resources for use in this step.

Mackey B, Sobey E, Letcher RA and Cuddy SM 2007, *InCReMent Phase 1: Design & Feasibility*, Report to Australian Bush Heritage Fund, Fenner School for the Environment and Society, The Australian National University, Canberra.

This document provides additional details on the approach to stakeholder engagement explained above.

The BHA experience

For BHA, financial investors were not the only stakeholders engaged. Other potential users of BHA reporting were also consulted. This other group were defined as potential beneficiaries of the

methodology or the reported information. This second group was considered as BHA is concerned with ensuring that lessons learnt at BHA are made available to other conservation and NRM groups.

The financial investor group (henceforth termed 'investors') was disaggregated into:

1) government organisations – those who are directly or indirectly responsible for the allocation of government funding to Bush Heritage projects
2) philanthropic investors – defined as those giving $25 000 or more over three years to BHA, and
3) small investors – defined as those giving less than $25 000 over three years to BHA.

The information beneficiaries group (also referred to as 'non-investors') was disaggregated into:

1) conservation or environmental non-government organisations (NGOs): non-government users of the information contained in the outcomes reports, and/or be interested in using the outcomes reporting approach
2) Catchment Management Authorities (CMAs) or Regions (terminology depending upon the state in which they exist) and NRM policy makers: government users of the information contained in the outcomes reports and/or interested in using the outcomes reporting approach, and
3) Internal (BHA) staff – such as Reserve Managers who assist in the implementation of the monitoring and evaluation (M&E) approach and who will use the information from the outcomes reporting for adaptive management purposes, and the BHA ecology team who also assist in the implementation of the M&E approach and can provide feasibility information regarding the information reported.

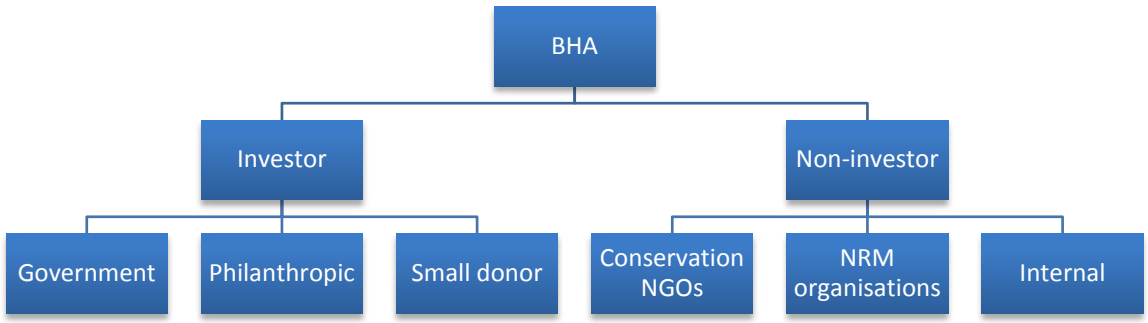


Figure 3: Hierarchy of Bush Heritage key information stakeholder groups.

Phase 4 – Implementation of the reporting

The final phase of the process relates to implementation of the new reporting processes. After all the work that has gone into the design of the new reporting processes, it is still possible for reporting projects to fail at this stage, however if stakeholder engagement has been conducted properly throughout the project the chances of this should be minimised.

The steps in Phase 4 are:

STEP 11: Building report processes into existing business procedures

Purpose of this step	To embed report generation processes into existing business processes, such as the generation of business cases and funding application forms. To ensure staff understand and embrace the value of the new reporting and have the knowledge and skills required to execute it. Provide opportunities for annual reflection on the effectiveness of the reporting within the current organisational context.
Outputs of this step	1. Updated business processes that include generation of the new reports. 2. Training of staff. 3. A plan for an annual reflection.
Why is this step where it is in the process?	Now that the new reports have been designed, the first step of implementation is modifying existing business procedures to ensure they are generated.
This step will likely involve	▪ All staff. ▪ The core project team. ▪ Various representatives from business units.

Our suggested approach to this step

- ✓ Ensure that training in organisational reporting systems is built into staff development and training including induction processes for new staff.
- ✓ Develop a system for staff feedback on the reporting process.
- ✓ Build recurrent budgets for reporting into annual allocations or organisational budgets.

Resources and suggested reading

The following is a list of resources for use in this step.

State of the Parks reporting in NSW National Parks < www.environment.nsw.gov.au/sop/index.htm>

This is an example of a system to gain feedback and comment from staff at all levels of the organisation. This can be useful when rolling-out new reporting procedures within an organisation.

The BHA experience

DRAFT - This section is to be completed by July 2009.

STEP 12: Monitoring and evaluating the impact on investor confidence

Purpose of this step	To evaluate the impact that the new reports have on investor confidence.
Outputs of this step	1. Feedback on new reporting. 2. Documenting suggested changes to reporting.
Why is this step where it is in the process?	Given the resources used to generate reporting, it is important to establish its real impact on investor confidence. This will also assist with refining any reports to further increase positive impacts.
This step will likely involve	▪ The core project team. ▪ A sample of investors.

Our suggested approach to this step

- ✓ Conduct an annual survey as part of wider existing investor consultation to determine the satisfaction of different investor groups of the reporting they receive.
- ✓ Undertake internal or external evaluation of the effectiveness of the reporting regarding investor confidence.
- ✓ Ensure that evaluation findings are used as part of the annual reflection and incorporated into a process of on-going improvement of reports.

The BHA experience

DRAFT - This section is to be completed by July 2009.

STEP 13: Using the reporting for internal improvement

Purpose of this step	To further refine the reports based on consultation with investors.
Outputs of this step	1. A list of business areas where the reasons for very high or low performance need to be explained.
Why is this step where it is in the process?	Once the first set of performance reports have been developed there is an opportunity to use it for identifying adaptive management opportunities, including changes to evidence that underpins the setting of expectations.
This step will likely involve	▪ The core project team. ▪ Relevant business units.

Our suggested approach to this step

Performance reporting can fulfil the role of alerting an organisation to adaptive management opportunities. Where significant differences are found to exist between expected and actual results, there may well be the opportunity to adapt current management.

In some cases, the cause of these differences may be events totally outside the control of your organisation, but for others it may indicate the quality of the evidence used to set expectations was sub-standard. Of course to establish this feedback loop, an organisation must first document the evidence it has used to establish expectations.

An Advisory Note has been developed that discusses the integration of performance reporting with evidence based practice.

Resources and suggested reading

The following is a list of resources for use in this step.

Silver M 2009, 'The role of evidence in delivering credible conservation performance reporting', Bush Heritage Australia, Melbourne.

This is an advisory note developed to accompany this guide. It provides a discussion of how evidence based practice can be used to improve the credibility and learning utility of performance reporting in conservation organisations.

Centre for Evidence-Based Conservation website <www.cebc.bangor.ac.uk/>

This website contains information about evidence-based practice in conservation and the role of systematic review methodology.

Hockings M, Stolton S, Leverington F, Dudley N and Courrau J. 2006, *Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. 2nd Edition.* IUCN, Gland Switzerland.

This provides a management effectiveness cycle that can be used as a basis for evaluating the effectiveness of conservation actions. This is useful when working out how to establish the linkages between your organisational outputs and conservation objectives in your organisational outcomes model.

The BHA experience

DRAFT - This section is to be completed by July 2009.

Glossary of terms

Adaptive management
Adaptive management is the practice of honing management approaches based on direct evaluation of the interventions or strategies employed. A more professional way of saying 'trial and error'.

Evidence-based practice
The explicit consideration of available evidence when making decisions in practice. This can involve the steps of asking answerable questions, accessing the best information, appraising the information, and applying the information.

Inputs
The resources that contribute to the production and delivery of an output. Inputs commonly include things such as labour, physical resources, and IT systems for example.[i]

Objectives
An objective is a succinct statement of the key goal(s) being pursed over the medium to long run. Objectives reflect the key components of the intended strategy.[i]

Outcomes
Outcomes are the impacts of, or consequences of interventions.

Outcomes models
An outcomes model explicitly sets out the relationships (as a series of consequences) between the things that we do (planning and interventions) and the things that we believe will result from these. An outcomes model describes a series of consequences not a series of actions.

Ouputs
Outputs are the goods and services produced by the organisation. Outputs are delivered to an external party (usually to the public either individually or collectively) and comprise the majority of day-to-day interaction between people and government. Outputs include things such as issuing licenses, investigations, assessing applications for benefits and providing policy advice. [i]

Performance
The difference between expected and actual results.

Performance indicator
Performance indictors provide a proxy where it is not feasible to develop a clear and simple measure. [i]

Performance reporting framework
A framework that enables reporting on the performance of an organisation with respect to the organisational objectives which may include environmental, economic and social outcomes.

Performance target
A performance target represents the level of performance that the organisation aims to achieve from a particular activity. A performance target may be a quantitative target such as sustained

reduction by 5% over a stipulated period. Such targets should be consistent with the 'SMART' criteria.[i]

[i] HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics 2001, 'Choosing the right FABRIC – A framework for performance information, HM Treasury, <http://www.hm-treasury.gov.uk/d/229.pdf>, accessed 8 May 2009.

An introduction to the basics of performance reporting for conservation organisations

An advisory note to accompany *A guide to designing and implementing performance reporting to increase the confidence of conservation investors*, a product of the Increment Project managed by Bush Heritage Australia.

June 2009

What is organisational performance reporting?

Performance reporting is the assignment of specific measures to indicate achievement of actual results against expected results. Performance can therefore be defined as the difference between actual and expected results.

Organisations often report their performance to both internal and external audiences. External reporting is most commonly delivered through an organisation's annual report. This is often supplemented by more regular updates of certain high interest performance measures.

Why do organisations conduct performance reporting?

Organisations conduct performance reporting for a variety of reasons. These can include:

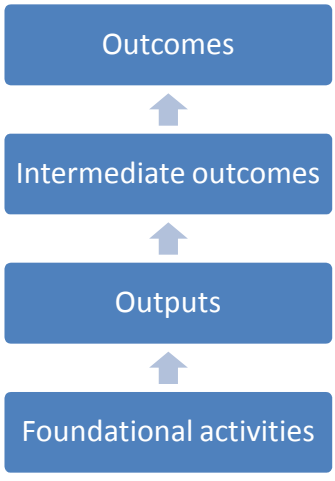
- ✓ it is a legal requirement (particularly for financial performance)
- ✓ it is a condition of funding
- ✓ to target areas of the organisation for learning and improvement, and / or
- ✓ to increase the confidence of stakeholders including funding bodies or donors

While this advisory note and associated guide focuses on increasing the confidence of those that invest in conservation outcomes, it is important to remember that organisational performance frameworks must be developed for multiple purposes to ensure internal and external audiences receive similar messages. It also minimises costs.

> *Performance can therefore be defined as the difference between actual and expected results.*

Essential elements of an organisational performance reporting framework

1. **Clear organisational objectives** – without these there is no way to show how parts of an organisation contribute to the whole.
2. **Outcome hierarchies** – also often referred to as results charts or program/intervention logic, these logic models assist in showing how an organisation works to achieve its outcomes. Outcome hierarchies are extremely useful when developing performance indicators.



3. **Performance indicators** – perhaps the most well known component of performance frameworks; these are sometimes referred to as Key Performance Indicators (KPIs). The intelligent selection of indicators is critical to ensuring the value of the reporting is maximised.
4. **Data collection methods** – methods need to be specified for the collection of data to ensure consistency over time. They are also a critical part of undertaking a viability analysis of indicators as the collection of data is often the most expensive aspect of a target.
5. **Reports** – the collection of the data is really just the beginning. The old adage that you can get statistics to tell you anything is largely true. Poorly designed reports will not only disguise the real story, but can also affect the ease at which the information is assimilated by the audience. For this reason the communication aspects of reports are just as critical as the content.

The presentation of reports affects their use and therefore the value the entire framework brings to your organisation.

What should be assessed for performance?

A conservation organisation should measure its performance in three key areas:

Foundational activities – the organisational activities that allow conservation action to take place. For example, business areas such as: fund-raising for NGOs, costs of operation, good governance, staff development and wellbeing, and information management. While these areas are not directly associated with conservation outcomes, their performance will significantly impact the achievement of those outcomes.

Outputs from program activity – while the traditional focus on output reporting has been criticised, it is still an important component of a holistic performance reporting framework. Accurately reporting outputs is the first step to being able to assess an organisations' contribution to its objectives.

Achievement and contribution to outcomes – this is undoubtedly the most challenging aspect of performance reporting for a conservation organisation – it is reliant on well designed program logic. Providing evidence of how your outputs have contributed to conservation outcomes that may only be realised 5, 10 and 20+ years in the future requires dedication and resources. It is important for a conservation organisation to consider both its positive and negative economic and social impacts.

The challenges of contribution and time lag for outcomes

As touched on above, providing evidence of contribution, and accounting for long time lags between outputs and outcomes are particularly challenging aspects of conservation performance reporting. For example, habitat restoration and salinity interventions often face these issues.

One of the best ways to manage both of these challenges is to develop strong evidence-based logic models. These models assist in the identification of appropriate performance indicators along the time line to outcome delivery. Such indicators are often described as progress markers.

The importance of report credibility

There is little point in implementing a performance reporting framework that isn't credible. Internal and external readers of the reports will never know if the information is accurate and therefore its value will be largely lost.

Here are a few ways to ensure reports are credible:

1. **Evidence-based practice** – ensure that conceptual linkages between your outputs and organisational objectives are based on the best available evidence. This means making full use of staff experience, effectiveness evaluations from past interventions, and up-to-date reviews of scientific literature.
2. **Pathways for independent auditing** – it is all very well for an organisation to tell others how well it is performing, but it never has the same impact on external audiences as independent auditing and evaluation.
3. **Reporter credentials** – surveys undertaken as part of the Increment project have indentified that readers of reports want to know what qualifications the reporters have.

What to expect while your organisation develops and implements a performance reporting framework

It will take some time – don't expect a performance reporting framework to be rapidly developed and adopted across the organisation. Some of the tasks involved, such as selecting appropriate indicators, and the acceptance of new or reviewed organisational objectives can be quite time consuming. Rushing them will lower the quality of the end result.

Differences of opinion – in many ways, developing performance reporting is a negotiation of where the organisation is headed and what the most important things are to ensure you get there. Be prepared for differences of opinion and be tolerant of each other's opinions.

The potential for change – sometimes as a result of going through the process of establishing a performance reporting framework there can be realisations that certain areas of the organisation are not aligned with objectives or could be structured better to achieve results. While this may be a short term disruption, it is one of the best possible outcomes of setting up performance reporting.

Calls to participate – broad participation is a critical requirement of developing performance reporting. Even if you aren't in management or you don't think you are particularly 'strategic', a diversity of backgrounds and ideas will only make the end product better. Ensure that you participate when called on so that your experiences within the organisation can add value.

Other advisory notes in this series

- ☐ Developing organisational outcomes models
- ☐ Setting SMART targets and selecting performance indicators
- ☐ Presenting conservation performance reports for investors
- ☐ The role of evidence in delivering credible conservation performance reporting

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Developing organisational outcomes models

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What is an outcome?

An outcome is an end point or the destination of where we would like to be or in fact are. When considering the outcome of an intervention we can think of the outcome as being the result of the intervention. A result may be observed in the short, intermediate or long term, and an outcome may be positive or negative, neutral, intended or unintended.

When developing outcomes models, ideally an outcome is not written as:

1. a statement of how it was achieved, e.g. increased number of Mallee Fowl due to fox control
2. a statement that specifies the number, timing and location of the anticipated result – this is a target, or
3. a negative result.

What is an outcomes model?

An outcomes model explicitly sets out the relationships (as a series of consequences) between the things that we do (planning and interventions) and the things that we believe will result from these. An outcomes model describes a series of consequences not a series of actions.

Outcomes models can be referred to as intervention logics, program logic, program theories, results chains and strategy maps.

Outcomes models are structured to show a cascading effect of steps moving from 'capacity' to 'activities' to 'outcomes' and 'impact'. Cause-effect relationships between these components are often indicated by arrows, which can be one-to-one or many-to-many relationships.

An outcomes model is structured using levels that represent a logical hierarchy of consequences. These should act as a guide only for building the model and not constrain the content of the model. Commonly used levels in a NRM hierarchy include:

- capacity/planning
- activities/interventions
- outputs
- intermediate outcomes, and
- long term outcomes/impacts.

There are no rules for how many steps there may be within any level or in any outcomes model. For example an activity may lead directly to a long term outcome or there may be a series of five cause and effect intermediate outcomes resulting from the activity that lead to the ultimate long term outcome.

Why are outcomes models useful for performance reporting?

Performance reporting often involves measuring and reporting on achievements at multiple levels of expected results that are made explicit in an outcomes model. Outcomes models effectively communicate where it is desired, important or necessary to report on performance. For example an organisation may wish to report on the impact of a particular investment, program or project. The outcomes model enables the component relationships for the investment, program or

project to be explicit making the decision of where to report much easier.

Outcomes models enable us to visualise the hierarchical relationships between our activities and expected outcomes making performance reporting needs explicit

How do we derive outcome statements?

Outcome statements are derived from an organisation's goals, objectives, mission or plan. They reflect where an organisation wants to be, rather than how it intends to get there. Outcome statements are worded in the positive, with each statement reflecting just one outcome, not several.

An example of developing an outcome statement from an organisational goal is:

Goal: By protecting 1% of Australia (7 M ha), BHA conserves significant parts of Australia's most important high conservation value land and water.

Outcome statement: Conservation of significant parts of Australia's most important high conservation value land and water.

The quantification of how this will be achieved (protecting 1% of Australia [7 M ha]) is the target for this outcome.

Developing outcomes models

There are several excellent, detailed resources available to assist with development of outcome models. In particular the EasyOutcome site: www.easyoutcomes.org/guidelines/outcomeguidelines.html provides an excellent step-by-step approach. Building outcomes models using visual logic software such as DoView is effective in quickly communicating how you believe a project or program works.

The essential steps in developing an outcomes model are:

1. **Clarify your goals, objectives, mission or plan** – this is a task that would normally be undertaken as part of organisational development but may need several iterations of refinement as the organisation matures. These statements would define the nature of the organisations business and what it hope to achieve.
2. **Develop outcome statements from your goals, objectives or aspirations** – outcome statements are developed from an organisation's goals, objectives, mission or plan to reflect the destination or end point.
3. **Structure these outcome statements in a logical hierarchy** reflecting which outcome would lead to another. A useful way of doing this is to take an outcome statement and ask the question, 'If we achieve this, what will it lead to?' It is useful to structure the outcomes using levels such as capacity/planning, activities/interventions, outputs, intermediate outcomes and long term outcomes/impacts.
4. **Look for gaps** starting from the highest level outcome and working down the outcomes model. Can you read an outcome and say, 'Yes this will be achieved if we achieve these outcomes below it'.
5. **Consider other external influence outcomes** – these would include outcomes resulting from consequences outside the influence of your organisation. These are important to recognise for performance reporting.
6. **Show the cause and effect linkages in the model.**

Tips for building outcomes models

There are several tips and traps to be aware of when developing outcomes models. You will be surprised how quickly you will begin to build good outcomes models once you understand the basics.

Some tips and traps include:

- ✓ Outcomes models are best built with a small group of people from your organisation.

- ✓ Use singular not composite outcome statements –describe one outcome only and not how it will be achieved.
- ✓ Keep the quantification of outcomes and the indicators separate to the model.
- ✓ Large complex models can be developed by nesting or linking separate subordinate models to the higher level model.
- ✓ Don't force outcomes into particular horizontal levels and put in as many steps as you see relevant in each level.

Accountability in outcomes models

Outcome models may be built to only show outcomes that are measurable or attributable to the actions of the organisation. This can provide a form of accountability for the organisation but these models are very limited in their use for determining where there are unexpected outcomes, what has caused these and what indicators maybe appropriate for measuring them. It is therefore best to develop outcomes models that reflect the 'real world' set of cause and effect outcomes. This also assists in describing external versus internal influences for performance reporting.

Biodiversity and outcomes models

Outcomes models are particularly useful for visualising the hierarchy of outcomes and cause-effect relationships for complex issues such as biodiversity. There is a significant body of literature on approaches for measuring biodiversity, considering the complex issues of scales of time and space, functionality of landscapes and the longevity of outcomes. Often there is a lack of clarity of definition of long term biodiversity outcomes that are suitable for measuring performance. There are many reasons for this including:

- a lack of consensus on the future shape of the landscape regarding biodiversity outcomes
- a lack of understanding of cause and effect relationships leading to biodiversity outcomes
- complex concepts of outcomes at different spatial and temporal scales, thresholds of change, and clear definition of resilience and stability, and
- a lack of guidance for classifying and prioritising biodiversity assets and values.

Biodiversity outcomes models enable the complex array of cause and effect relationships to be more explicitly visualised and described. The many-to-many relationships can be shown without lengthy descriptions with detail being nested in separate contributing outcomes models.

Pilot: Bush Heritage Australia's outcome models

During the Increment project Bush Heritage Australia (BHA) developed outcome models at several levels for different levels of performance reporting. These were developed at the organisational level (Figure 1) and at the reserve level (Figure 2). You will notice that the outcomes at the organisational level are much broader than those at the reserve level. We can think of the reserve level outcome model as being a subset or 'nested' within the organisational level outcome model. For BHA there will be many separate outcome models nested within the organisational logic representing different the organisational structure – outcome models for individual Anchor Regions and outcome models for individual reserves.

Using software such as DoView the individual outcome models for these different levels within the BHA structure can be neatly linked to the overall organisational outcome model as a series of separate models. For example the reserve outcomes model shown in Figure 2 would be directly linked to the BHA organisational outcomes model shown in Figure 1 from the blue box 'Acquisition and Management of Reserves'.

Figure 1. The BHA organisational outcomes shown above the line and the organisational areas of business or activity that contribute to these outcomes are shown below the line.

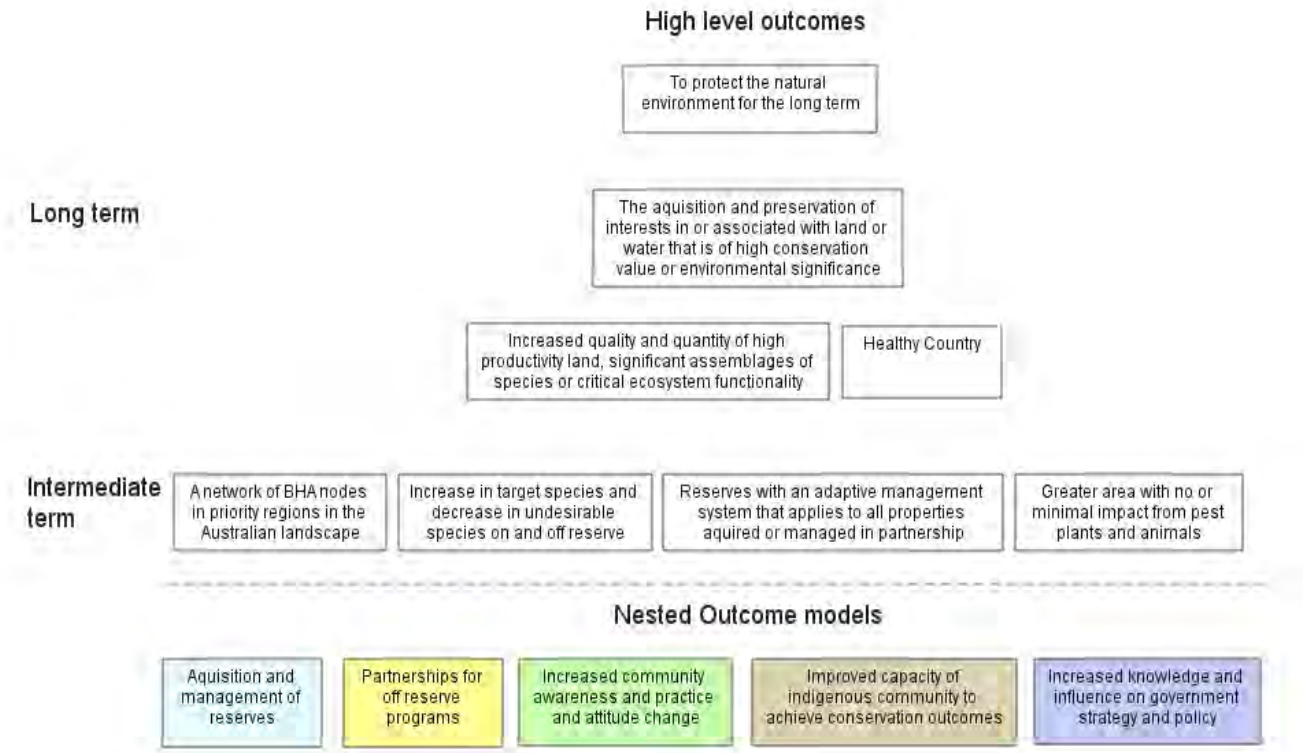
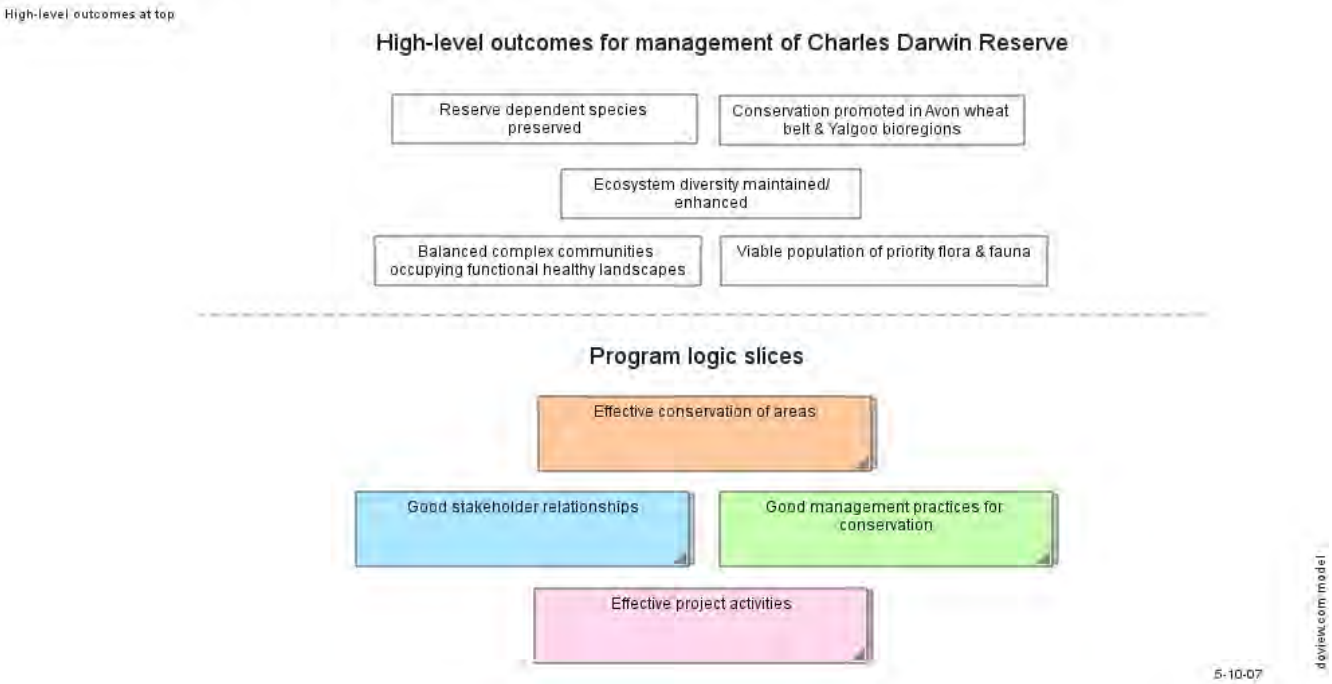


Figure 2. Outcomes model for Charles Darwin Reserve showing long and intermediate term outcomes above the line and the areas of reserve business or activity below the line. Each of these coloured boxes would link to separate outcomes models.



Other resources for outcome models

Easy Outcomes
www.easyoutcomes.org/guidelines/outcomeguidelines.html

Guide to develop outcome models
www.outcomesmodels.org/

Australian Government MERI plan
www.nrm.gov.au/publications/books/pubs/meri-program-logic.pdf

University of Wisconsin-Extension
www.uwex.edu/ces/pdande/

Innovation Network
www.innonet.org/

W.K Kellogg Foundation Evaluation Resources
www.wkkf.org/programming/overview.aspx?CID=281

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Setting SMART targets and performance indicators

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June 2009

Measuring performance

As discussed in the 'Basics of Performance Reporting' Advisory Note, the Increment project defines performance at three levels – capacity, activity and outcome or impact.

What are SMART targets and performance indicators?

While targets themselves, should not be confused with the wider goals, they are important step in the delivering and measurement of progress towards those goals. Unlike strategic objectives or goals, targets should state a specific product and timeframe for achievement.

SMART targets and performance indicators are those that meet the SMART criteria described below. Meeting the SMART criteria ensures that targets and performance indicators can be clearly communicated, and are concise, clear, accountable and relevant.

In general terms we may define a target and indicator as follows:

Target: a measurable result, expected to be achieved in a given timeframe, a stepping stone to achieving an ultimate desirable resource condition.

Indicator: what we actually measure to monitor change in the status of an asset or activity. 'Indicator' is often used in the biodiversity context as a surrogate that is easily measured for something more complex and difficult to measure

Specific

The target should state exactly what is to be achieved.

Specifics help us to focus our efforts and clearly define what we are going to do. Your target should be stated as simply, concisely and explicitly as possible.

Measurable

A target should be capable of measurement – so that it is possible to determine whether (or how far) it has been met. The target should be capable of showing measurable incremental change in units that are understood by a wide audience.

Achievable

The target should be realistic given the circumstances in which it is set and the resources available (knowledge and time).

The target needs to be developed with reference to existing and potential capabilities of the stakeholders. The target should be set in relation to expected 'rates of change'.

Relevant

Targets should be relevant to the people responsible for achieving them. The target needs to be relevant in time.

A target should demonstrate progress to its linked outcomes and the 'big picture'.

Timely

Targets should be set with a timeframe in mind. These deadlines also need to be realistic. Without a

time limit, there is no urgency to start taking action now.

Why do we need to set targets and performance indictors?

Targets are a useful means of assessing progress towards the achievement of stated goals or organisational objectives. Targets together with performance indictors provide a currency that is measurable, accountable and easily understood. Targets also are important as:

- The basis for reflecting what is most important for investment.
- A tool for focusing resources and effort.
- A mechanism to evaluate the efficiency and effectiveness of investments.
- A communication tool for investors, community, staff and other stakeholders.
- A statement to provide accountability.

Where should we be reporting on performance?

Where you decide to measure and report on performance will depend on a number of internal and external factors influencing your organisation. These include:

External

- Your reporting requirements to external stakeholders such as investors, supporters or funders.
- Your reporting obligations for external statutory requirements such as Annual Reports or against Acts of Parliament.
- For meeting requirements under regional, state or national strategies, plans or treaties.

For example, BHA has identified the reporting preferences of external stakeholder groups including government, philanthropic and small donors.

Internal

- Reporting on the organisation's change in capacity.
- Reporting on internal activity or achievements.
- Reporting to staff, Board or Executive on internal performance for learning and improvement.

For example, BHA has identified steps within the Management Effectiveness Cycle (measures that evaluate whether they have the management processes in place to support implementation of strategies and measurement of outcomes) as being key for performance measurement and reporting.

Essential elements of setting targets and performance indicators

In order to set good targets it is desirable to have a well constructed set of outcome statements, preferably in a logical hierarchy. This is why the previous step of developing your outcomes models is so important. The outcomes models define the subject matter and the hierarchy (targets will also often have a hierarchy defining different levels of specificity of scale and topic) of the outcomes that provide the basis for then defining some specificity and quantification for outcome statements where you wish to measure performance. Targets themselves can often be considered as indictors in the sense that they are often measurable attributes of a system.

Before you embark on the process of setting targets, ideally you will need some pre-requisite work and resources, namely:

- a set of clear hierarchical outcomes models
- a set of clear questions that define your needs or desires for measuring performance
- the right mix of managerial and technical staff, and
- conceptual or systems models,

Target statements

There are generally four elements to a target statement that has high utility and subscribes to the SMART criteria. It is often not possible or necessary to have all of these elements explicitly written in the target statement. Some elements, such as the time frame for a target if it is within a plan with a known timeframe, may be implicit. Other elements, such as the measure, may be recorded as supplementary information to the target.

Topic + how much, where, (who) and when + syntax (+ measure)

1. **Topic** – Assets-values-specific (where and what) Program logic

2. **How much, where, who and when** - quantifying our future aspirations compared with future or current state (reference or benchmark). Are there thresholds that need to be considered?

3. **Syntax** – Clear, concise and consistent statement

4. **Measure** – How do we know when we had success or are even on the road to success? Can we define some measures of success.

Constructing targets

For the purposes of the steps below the following outcome statement will be used: *"Maintained or restored ecological function"*

1. Using the outcome statements you have developed for your outcomes models, consider where it is appropriate that you set a target. In doing so it is important to consider the key driver for reporting both internal and external. Remember it is easy to set targets but expensive to monitor them!
2. Make the outcome statement specific regarding the topic and spatial location. *"Restore soil surface stability at priority locations on Charles Darwin Reserve*". Consider whether monitoring this target will provide us with enough information to show progress towards the goal or objective.
3. Make the statement measurable. "*Improved soil surface stability by three scores at priority locations at Charles Darwin Reserve".*
4. Make the statement time-bound. "*Improved soil surface stability by three scores at priority locations at Charles Darwin Reserve by 2012".*
5. A range may be set: "*Improved soil surface stability by three scores at 50 % of priority locations and two scores at the remaining 50% of priority locations at Charles Darwin Reserve by 2012".*
6. Determine what measures will be used to track progress or success. Relating to our original outcome statement we may use increased biological crust or biomass as a measure of success in achieving this target.
7. Determine suitable indicators. For this example landscape function analysis (LFA) or other soil surface assessment techniques maybe used.
8. Document the target development, rationale and measures of success and indictors to be used.

Tips and traps for target setting

1. **You don't need targets for everything** – consider where it is most appropriate to have a target to assist with your business management. It may be appropriate to set targets that you are accountable for and targets that are used for improving internal management effectiveness.
2. **Match the detail to the need –** set the target at the level of detail that is required for management decisions to be made
3. **Record the history and rationale for development of the target**. The legacy and rationale of the target is critical to someone reviewing the utility or logic of a target. In

some case targets have been set according to short term drivers.

4. **Ensure that the target relates directly to goals** and objectives
5. Targets maybe **qualitative or quantitative but they can still be SMART**

Check questions for targets

1. (For outcome targets) Does the target describe a biophysical outcome?
2. Is there a timeframe for achieving the target?
3. (For outcome targets) Does the target focus on one asset or topic only? (can have multiple outcomes)
4. Is there a reference point (measure of success) or benchmark (measure of departure from)?
5. Is there clear rationale in achieving the outcome?
6. Is there a clear relationship to the organisational objectives or goals?
7. (For outcome targets) Is the target technically and ecologically feasible?
8. Is the target feasible with expected resource inputs?
9. Can a suitable indicator be used to measure target progress and success?
10. Are there thresholds that need to be considered?

Target ranges

In considering targets as stepping stones for assessing progress towards long term goals it can be useful to set ranges for targets so that the focus becomes on getting the trajectory right rather than the focus being on "hitting the number." The target range may be set through the identification of upper and lower thresholds. These quantitative thresholds maybe biophysical (maximum nutrient levels in water) or social (minimum number of participants). Target ranges provide greater latitude for accommodating performance variations due to externalities or unexpected outcomes.

Measures and indicators – what's the difference?

A measure is a direct observation of the thing of interest, whereas an indicator is a surrogate of the measure. It is often more feasible to monitor an indicator than it is the direct measure.

Sometimes several measures or indicators may be bundled together as an "index".

Selecting performance indicators

There is a large body of literature on developing and selecting performance indicators. These are generally divided into two type of performance indicators, i) those for measuring program performance and ii) those for measuring outcomes or impact. Types of indicators include:

- an Index – made up of several indicators, and
- a single indicator.

Often three types of indicators are used:

- *State indicators* – refer to changes in the status or trend of the asset.
- *Pressure indicators* – refer to measures of stress on a system such as threats like pest plants and animals or pollution
- *Response indicators* – refer to the way we have managed the asset. These may include qualitative measures.

There are numerous lists of indictors that have been developed for application at different levels – national, State and local. Before developing new indictors it is recommended that existing indicators are reviewed.

Pilot: Bush Heritage Australia targets and performance indicators

BHA has developed a hierarchical approach to the operation and functions of the organisation. This hierarchy ensures that there is contribution of outcomes from property/project to

node/landscape to Anchor/regional to national objectives. At each level targets and indicators have been set to enable progress towards objectives to be measured. The objectives, targets and indicators developed are all used to measure progress towards achievement of the Key Conservation Values, specific to Anchor Regions.

For example the Queensland Uplands and Brigalow Belt Anchor region has a set of unique defined Key Conservation Values. An objective has been set for this Anchor region: "By 2025 secure 1.95 million hectares of land, with more than 30% of this area comprising key habitat values." This objective has a number of well defined stepping stone targets for acquisition of key habitat values within strategic timeframes that will lead to the achievement of this objective.

At a property level BHA has developed an Outcomes Monitoring Program that uses specific indictors and methods to collect data that aims to show progress towards the BHA property and regional outcomes.

For example: One goal is to "Maintain or restore functionally integrated communities". This goal has seven measures of success including "Changes in vegetation structure". This is measured using the indicators of "Changes in the proportion of different strata" and "Number and type of strata".

Other resources for outcome models

Australian Government National Resource Condition Indicators
www.nrm.gov.au/publications/factsheets/me-indicators/index.html

Easy Outcomes
www.easyoucomes.org/guidelines/outcomeguidelines.html

Australian Government MERI plan
www.nrm.gov.au/publications/books/pubs/meri-program-logic.pdf

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The role of evidence in delivering credible conservation performance reporting

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June 2009

Issues covered in this advisory note

This note provides advice on the role of 'evidence' in delivering a credible performance reporting framework:

- ✓ What is evidence?
- ✓ What is evidence-based practice?
- ✓ Why is evidence important to performance reporting in conservation organisations?
- ✓ How can evidence based practice be used in performance reporting?

What is evidence?

Evidence can be defined as:

> that which tends to prove or disprove something; ground for belief; proof.[i]

An important differentiation between the concepts of information, knowledge and evidence is that the use of evidence is normally subject to standards of credibility and relevance. In legal settings, pre-determined rules around credibility and relevance are used to assess the admissibility of evidence.

Science strives for objective certainty, seeking irrefutable evidence that can hold up to repeated tests of falsification. This standard of proof affords only a narrow range of evidence.

What is evidence-based practice?

Evidence-based practice (EBP) is an approach used to ensure the quality of decisions made when practicing. Evidence-based medicine has been defined as integrating clinical experience and patient values with the best available research information. It uses four steps: asking answerable questions, accessing the best information, appraising the information, and applying the information to patient care.

The four steps of evidence-based practice

Some points about these core components of EBP are:

- Setting answerable questions is critical to being able to apply EBP and involves the structuring of questions to isolate cause and effect relationships.
- Accessing the best evidence, in environmental practice at least, does not mean only using scientific literature. It also means taking account of experiential evidence and locally generated monitoring

and evaluation, but literature must be assessed.

- The 'critical appraisal' of evidence is what differentiates EBP from traditional reviews of evidence or literature. It involves the assessment of each piece of evidence against a pre-defined standard of quality. It can be thought of as weighting the evidence so that the most relevant and credible pieces have the most impact on the final decision.
- All the work done to determine the best-available evidence is worth little if decision-making protocols do not acknowledge its value. Hence, broad agreement on the appraisal of evidence is required to ensure the quality of decisions is in fact improved by EBP.

The place of systematic reviews in conservation

The process of systematic reviews has been broadly applied in the medical and education sectors. This process involves a comprehensive assessment of all currently available literature related to a specified question. The difference between this and a traditional literature review is the application of critical appraisal of individual pieces of evidence.

Perhaps the most famous systematic review organisation in the world is The Cochrane Collaboration. Charlie Cochrane was the founder of this group and a pioneer of EBP. Systematic reviews have revolutionised the communication of medical research to practitioners and increased the quality of care.

In 2001, the Centre for Evidence Based Conservation was started in the United Kingdom and is the first organisation to undertake and support systematic reviews in conservation. This organisation has made a leading contribution to the application of EBP to conservation. Existing conservation systematic reviews can be viewed at www.environmentalevidence.org/.

Why is evidence important to performance reporting in conservation organisations?

The impact of performance reporting on investor confidence will be moderated by the credibility that the reporting has in the eyes of that investor. The credibility of reports is determined by a number of factors, including the provision of evidence to substantiate claims.

> *Accessing the best evidence, in environmental practice at least, does not mean only using scientific literature. It also means taking account of experiential evidence and locally generated monitoring and evaluation.*

Minimising bias in reporting and being transparent about the processes used to generate reports can build credibility with investors. For example, how would you feel as an investor if you found out all the performance indicators were determined by the staff subjectively rating their own performance? Or the conservation outcomes were determined by a consultant without appropriate qualifications? Would it have any credibility?

How can evidence-based practice be used in conservation performance reporting?

The following tips explain how to use and apply EBP when developing performance reports.

1. To substantiate outcomes hierarchies – EBP has primarily been applied in the medical and education sectors to determine the effectiveness of specific interventions to deliver specific outcomes. EBP can also be applied in this way to conservation and natural resource management.

Another advisory note in this series discusses the use of organisational outcome hierarchies to link organisational activities to outputs and outcomes. Such hierarchies should be substantiated with summaries of the best available evidence. If

possible, those summaries should have links back to the individual pieces of primary evidence used and the critical appraisal that was conducted on each piece of evidence.

2. To communicate knowledge of landscapes – people want to know the underlying cause of environmental problems in the landscape. Evidence-based conceptual models can be used to explain to non-technical and technical readers of reports your organisation understands of particular threatening processes. This is an important mechanism to build trust that you know what you are doing and have the necessary expertise to bring about change.

3. Building trust through transparency of processes and minimising bias – communicating efforts to minimise the impact of bias on reports will increase confidence in your organisation and is a hallmark of good governance. While some audiences may not understand the detail of the processes themselves, the knowledge that your organisation takes this issue seriously and has measures in place to minimise bias will likely increase confidence.

4. Establish clear evidence-based expectations as part of program and project planning – it is not possible to assess performance without clear expectations of results. However even in cases where expectations are set and the actual results exceed those expectations, people will always ask 'what were the expectations based on? By making the provision of evidence-based assumptions in program strategies and project business cases, this information is always available to answer that very question.

5. Facilitation of organisational learning – in cases where actual results vary significantly from the expected results, the accuracy of the evidence that those expectations were made using should be assessed. If that evidence used to make the original estimates is not documented then this learning process is not available to the organisation.

5. Using the concept of evidence standards to guide the selection of indicators – there will often be many different options for performance indicators and also the methods by which those indicators are measured. Having an agreed organisational standard of what evidence is, and is not, acceptable (i.e. admissibility) can assist selection of indicators and methods.

Other advisory notes in this series

- ☐ An overview of performance reporting concepts for conservation organisations
- ☐ Developing organisational outcomes models
- ☐ Setting SMART targets and selecting performance indicators
- ☐ Presenting conservation performance reports for investors

This series of advisory notes accompany:

A guide to designing and implementing performance reporting to increase the confidence of conservation investors

For more information visit
www.bushheritage.org.au/increment

BUSH HERITAGE AUSTRALIA

Landscapes for life

The Increment project was jointly funded by the Department of Environment, Water, Heritage and the Arts and Land & Water Australia.

[i] http://dictionary.reference.com/

Presenting conservation performance reports for investors

An advisory note to accompany *A guide to designing and implementing performance reporting to increase the confidence of conservation investors*, a product of the Increment Project managed by Bush Heritage Australia.

June 2009

Issues covered in this advisory note

This note provides advice on the structure and presentation of performance reports for conservation investors and donors. The advice is based on a series of interviews conducted with Bush Heritage Australia (BHA) investors during Phase 1 of the Increment project[1] and covers the following aspects of report communication:

- ✓ How similar are the communication preferences of investors?
- ✓ The balance of conservation, financial, social and process information
- ✓ Text, graphics or photos?
- ✓ The importance of language
- ✓ Report structure
- ✓ The importance of aesthetics
- ✓ Web, email, hardcopy or all of the above

How similar are the communication preferences of investors?

Conservation investors clearly differ in how they prefer performance reports presented and structured. However, these differences may well be explained by an investor's level of technical conservation knowledge.

The interviews with BHA stakeholders established that investors without technical knowledge invest based on trust they have in an organisation, which driven by personal relationships and knowledge of organisational processes, not knowledge of conservation outcomes. This point is important, as it demonstrates that conservation outcome reporting is not the only thing that builds investor confidence. Preferences also seem to vary based on the time investors have available for, or are willing to dedicate to, reading performance reports.

> *It shouldn't be assumed that reports of conservation outcomes are the only thing that builds investor confidence.*

This advisory note discusses the use of report structure to provide the various investor groups with the information they seek.

The balance of conservation, financial, social and process information

Information on an organisation's environmental and ecological outcomes should form the largest part of a performance report. A small amount of social information should also be included, as well as some measure of the relationship between financial investment and the outcomes.

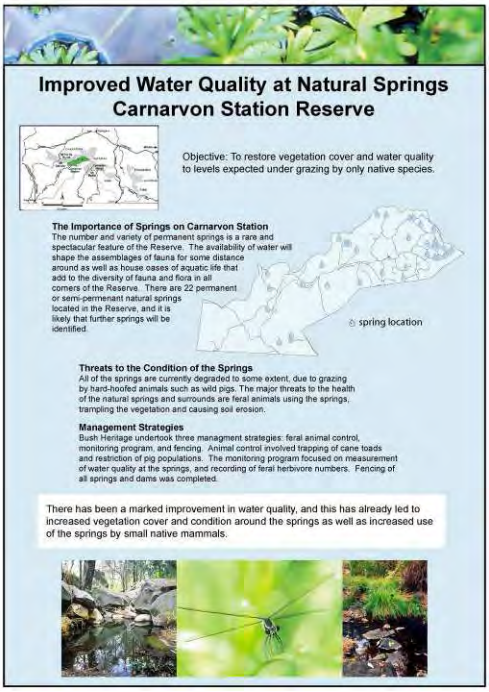
To assist with establishing credibility with those investors with a technical conservation background, the methodologies used for data collection and analysis should be made accessible. For those investors without a technical

[1] A detailed report of the findings from these interviews can be found at www.bushheritage.org.au/increment. Those interviewed were BHA stakeholders. Findings discussed in this note should not be assumed to be relevant to all organisations.

background, the credentials of reporters should be provided. This could include formal qualifications, experience and publications they have authored.

Text, graphics or photos?

Using a combination of styles to present performance outcome information is recommended because investor preferences tend to be extremely personal.



All elements of the reporting presentation should remain as simple as possible to facilitate ease of understanding and comprehension.

Graphs must be as simple as possible, perhaps through the use of indices or scorecard type approaches. Pie charts are a particularly effective means of presenting areas of expenditure.

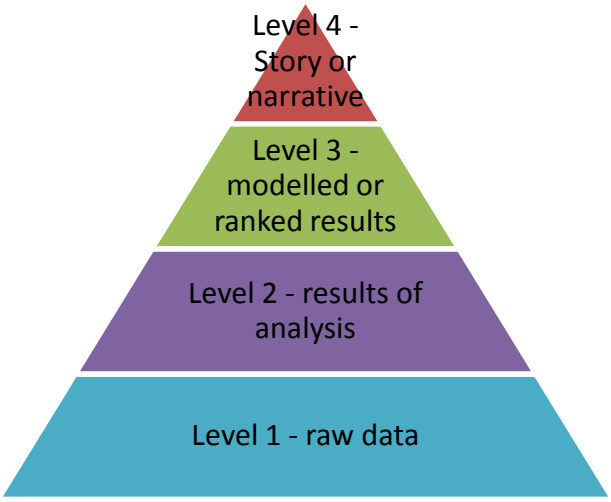
Photos must be useful and substantiate the story being told, rather than just being a great picture. This may for example be a time series of photos from the same restoration site showing improvement in habitat. However one note of caution here, be cautious about the use of fence line comparisons showing the effects of poor management – imagine how you would feel if you saw your property used as an example of what not to do!

Text should be chronological (e.g. problem-action-outcome), but for those stakeholders who would have preferred the outcomes first, this can be overcome by describing the outcome in the report title (e.g. 'Improved Water Quality at Natural Springs on Carnarvon Station Reserve').

Report structure

A report's structure has a large bearing on the length of time a reader is prepared to take to comprehend the information it contains.

During the Phase 1 BHA stakeholders interviews, four 'levels' of reporting were shown to participants. These four levels were:



The responses to these different levels showed that preferences varied considerably within the different stakeholder groups of small and large scale private investors and government representatives. However, in general:

- a quantitative narrative was preferred at Level 4, as opposed to editorial style without any quantification of results
- level 3 was the most popular, therefore more detailed underlying data, such as modelled results, results of analysis and raw data should be available to stakeholders in their entirety
- it is suggested explanations of modelling results be included to ensure they are understandable to the majority of stakeholders

- raw data and results of analysis (Levels 2 and 1) were not as commonly requested, and as such may only be available to those who specifically request it, and
- given that those interested in Levels 1 and 2 are most likely to have a scientific background, these levels need not be modified or annotated to the extent of the more interpretative levels of information.

So if you wish to accommodate a range of audiences with the one report structure – internal and external, technical and non-technical – a layered structure is highly recommended as it provides broad accessibility and accommodates preferences for style and detail.

The importance of aesthetics

Some may consider it wasteful to spend limited resources on superficial things such as professional design of documents. However, consider all the effort that has gone into the design of the reporting framework, the collection of data and experiences, the analysis and authoring of reports. Do you want your reports to fall at their last hurdle – readability?

A document's layout and design significantly impacts its usability. Your organisation would be better placed to reduce its number of indicators by one or two in order to ensure reports are read. In most cases a one-off cost to generate templates will be sufficient.

Web, email, hardcopy or all of the above?

The preference of investors to receive hardcopy, email or web-based reporting will vary. Perhaps the best solution to this is taking the option that many corporations such as banks and telco's are taking these days, which is to simply ask and provide a customised service.

It should be noted that apart from the obvious environmental benefits, the web is designed to aid in the presentation of highly structured information, allowing people to navigate quickly to areas of interest.

Other advisory notes in this series

- ☐ An overview of performance reporting concepts for conservation organisations
- ☐ Developing organisational outcomes models
- ☐ Setting SMART targets and selecting performance indicators
- ☐ The role of evidence in delivering credible conservation performance reporting

This series of advisory notes accompany:

A guide to designing and implementing performance reporting to increase the confidence of conservation investors

For more information visit
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Landscapes for life

The Increment project was jointly funded by the Department of Environment, Water, Heritage and the Arts and Land & Water Australia.

This document contains extracts from Mackey, B., E Sobey, RA Letcher and SM Cuddy (2007) *InCReMent Phase 1: Design & Feasibility*. Report to Australian Bush Heritage Fund. Fenner School for the Environment and Society, The Australian National University, Canberra.

A literature review to inform a framework for reporting to conservation investors

Bush Heritage Australia

Rob Richards

Rebecca Kelly

Mathew Silver

2009

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Table of Contents

Tables

Figures

Abbreviations and acronyms

ANAO	Australian National Audit Office
ANU	Australian National University
AWF	Africa Wildlife Foundation
BHA	Bush Heritage Australia
CCF	Cambridge Conservation Forum
CEBC	Centre for Evidence Based Conservation
CI	Conservation International
CMA	Catchment Management Authority
CMP	Conservation Measures Partnership
EBP	Evidence-Based Practice
FOS	Foundations of Success
GBIF	Global Biodiversity Information Facility
IT	Information Technology
IUCN	International Union for Conservation of Nature
M&E	Monitoring and Evaluation
MERI	Monitoring, Evaluation, Reporting and Improvement
NBN	National Biodiversity Network
NFWF	National Fish and Wildlife Foundation
NGO	Non-government Organisation
NRM	Natural Resource Management
PSR	Performance Story Reporting
RAPPAM	Rapid Assessment and Prioritisation of Protected Area Management
ROI	Return on Investment
TNC	The Nature Conservancy
UQ	University of Queensland
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

1. Introduction

1.1 About the Increment project

'Increment' stands for **IN**vesment in **C**onservation and **RE**source manage**MENT**. The project is researching and developing a framework for reporting to increase the confidence of conservation investors. This basic premise of the project is illustrated in Figure 1.

Figure 1: The premise of the Increment project

The Increment project is being managed by Bush Heritage Australia (BHA), an Australian non-government conservation organisation. The aim of Increment is to develop approaches to reporting that will better inform existing and potential investors in conservation organisations and hence increase or maintain their investment.

1.2 The purpose of this document

This document presents a review of the literature that has been identified as relevant to the development of the reporting framework being developed as part of the Increment project.

1.3 How this literature review will contribute to the Increment project

This literature review will identify any existing processes and tools that could potentially assist in delivering the reporting preferences identified during Phase 1 of the Increment project. In doing so, this review will also identify specific areas requiring further development by this project.

The phases of Increment are planned as follows:

Phase 1 – Establishing reporting preferences to increase investor confidence

Phase 2 – Developing the approach to deliver the reporting preferences

Phase 3 – Testing and refining the approach

Figure 2 provides an outline of the key tasks to be undertaken within each of the project phases. It shows how the finding from this literature review will contribute to the Increment project.

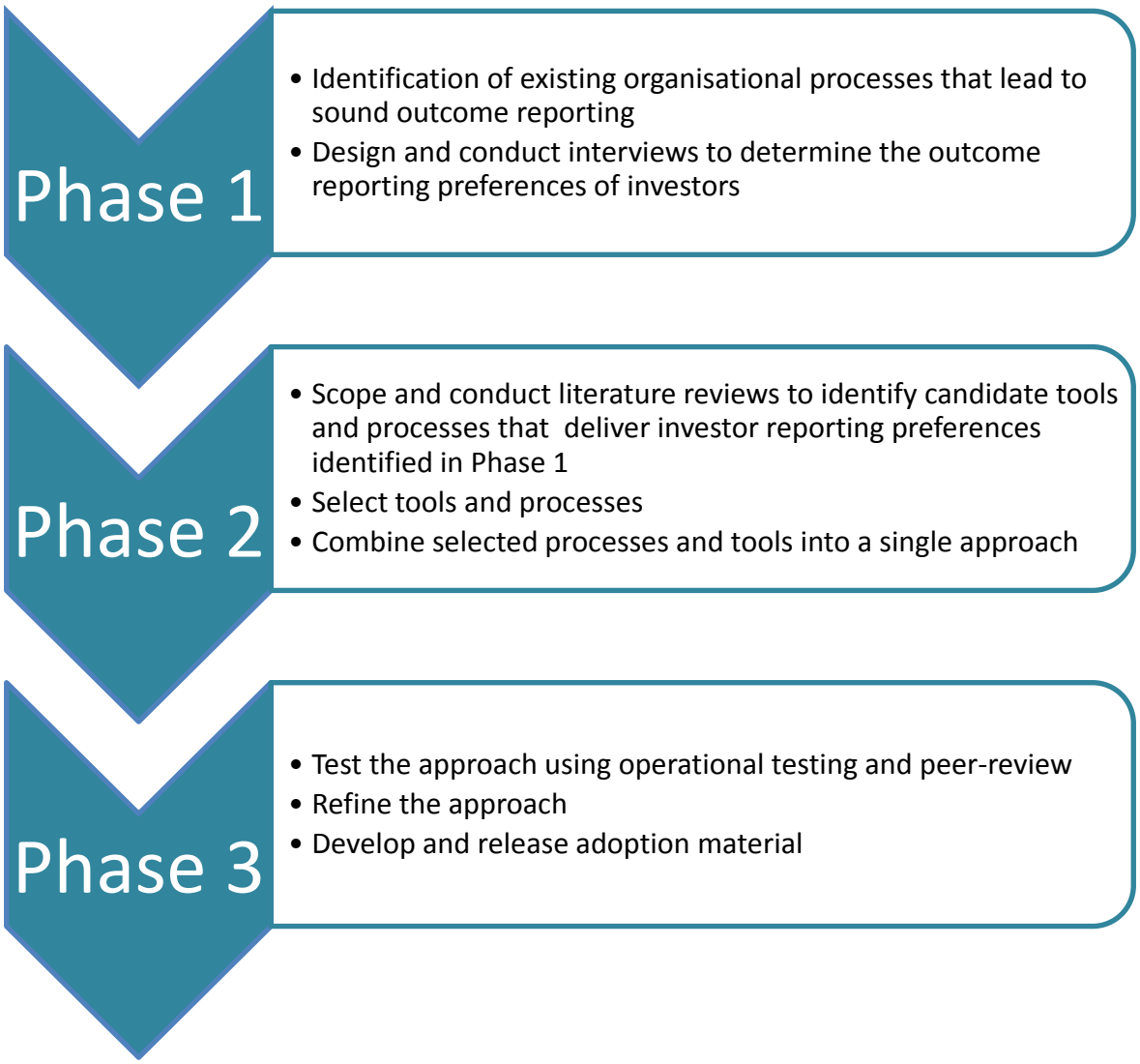

Figure 2: Key tasks within each phase of the Increment project

1.4 The structure of this literature review

This review begins with a discussion of its scope, including how it was defined (Section 2). This includes a summary of the findings from stakeholder engagement undertaken in Phase 1, which were largely used to guide the project scope.

Section 3 discusses the need for improved evaluation and reporting in conservation and natural resource management (NRM). Section 4 begins by discussing the components of performance reporting frameworks and tools before providing the scope for the subsequent sections, namely:

- Section 5 – Management effectiveness
- Section 6 – Measuring the performance of a conservation organisation's capacity, and
- Section 7 –The role that evidence based practice could play.

Finally, Section 8 discusses the areas requiring further development and research in the Increment project, as evidenced by the literature review.

1.5 Acknowledgements

The Increment project was funded by the Natural Heritage Trust, an Australian Government Program in conjunction with Land & Water Australia, which is a Research Development Corporation of the Department of Agriculture, Fisheries and Forestry.

The development of Increment has been managed by BHA with oversight by a project management committee. The project has been delivered with thanks to Stuart Cowell and Jim Radford from BHA, Rob Richards, Mat Silver and Rebecca Kelly (consultant specialists) and research collaborators including Ari Lowe (ANU), Brendan Mackey's team at the Fenner School, Australian National University (ANU) and Marc Hockings from the University of Queensland (UQ).

Thank-you also to those who provided time and feedback during the testing and peer review including Geoff Robinson (NE CMA), Jim Blackney (Trust for Nature), Sean Dwyer (Mallee CMA), Ari Lowe (ANU), Marc Hockings (UQ), Chris Williams (Consultant), Nick Salafsky (Foundations of Success, USA).

The project was also managed by an Australian Government steering committee and members of Land and Water Australia.

2. The scope of the literature review

The scope of this literature review has been principally determined by the findings from Phase 1 of the Increment project. The intensive stakeholder engagement undertaken in Phase 1 provided clear guidance of the reporting preferred by conservation investors and practitioners. A summary of the findings from the stakeholder engagement in Phase 1 and the development of subsequent questions that provided the scope for this review are included in sections 2.1 and 2.2, respectively.

It is the role of this review to identify tools and processes that would assist delivery of those preferences.

2.1 A summary of stakeholder engagement findings from Phase 1

Please note that the majority of this section has been extracted or modified from *InCReMent Phase 1: Design and Feasibility* (Mackey et al. 2007).

2.1.1 Objective of the interviews

The primary objective of the interviews was to establish the expectations and preferences of key stakeholder groups with respect to reporting on biodiversity conservation outcomes (see section 2.1.2 for a list of interviewed stakeholder groups).

Additional benefits also resulted from the interviews, including:

- education of stakeholder groups on reporting frameworks
- raising the profile of the project objectives, the project team and the sponsor organisation/s
- enforced rigour in project management to accommodate the stakeholder engagements, and
- development of prototype material very early in the life of the project.

2.1.2 Key stakeholder groups

'Stakeholders' are those individuals, groups or organisations that are either: actively involved in a project, are affected by its outcome, or are able to influence its outcome. This is a standard business definition.

The inclusion of BHA as the case study organisation for Increment proved critical to identifying and engaging with relevant stakeholders within the project timeframe. As the focus of the project was to develop high-level design specifications for reporting on biodiversity conservation outcomes, this could be further restricted to those stakeholders whose main interest lay in information reporting. For the purposes of Phase 1 of the Increment project, they have been termed 'information stakeholders'.

BHA's 'information stakeholders' were chosen as a representative sample of the broad range of stakeholders in the biodiversity conservation industry. This allowed the project team to limit the engagement strategy to those stakeholders connected to BHA in one of two roles, either:

- as a financial investor, or
- as a potential beneficiary of the methodology or the reported information.

Both groups were identified as critical and essential as not meeting their needs would have a high, negative impact on the usefulness of the reporting tool.

The financial investor group (henceforth termed 'investors') was disaggregated into:

1) Government organisations – those who are directly or indirectly responsible for the allocation of government funding to BHA projects
2) Philanthropic investors – defined as those giving $25 000 or more over three years to BHA, and
3) Small investors – defined as those giving less than $25 000 over three years to BHA.

The information beneficiaries group (also referred to as 'non-investors') was disaggregated into:

1) Conservation or environmental non-government organisations (NGOs): non-government users of the information contained in the outcomes reports, and/or be interested in using the outcomes reporting approach.
2) Catchment Management Authorities (CMAs) or Regions (terminology depending upon the state in which they exist) and NRM policy makers: government users of the information contained in the outcomes reports and/or interested in using the outcomes reporting approach.
3) Internal (BHA) staff – such as Reserve Managers who assist in the implementation of the monitoring and evaluation (M&E) approach and who will use the information from the outcomes reporting for adaptive management purposes, and the BHA ecology team who also assist in the implementation of the M&E approach and can provide feasibility information regarding the information reported.

Figure 3 illustrates the stakeholder groups that were interviewed.

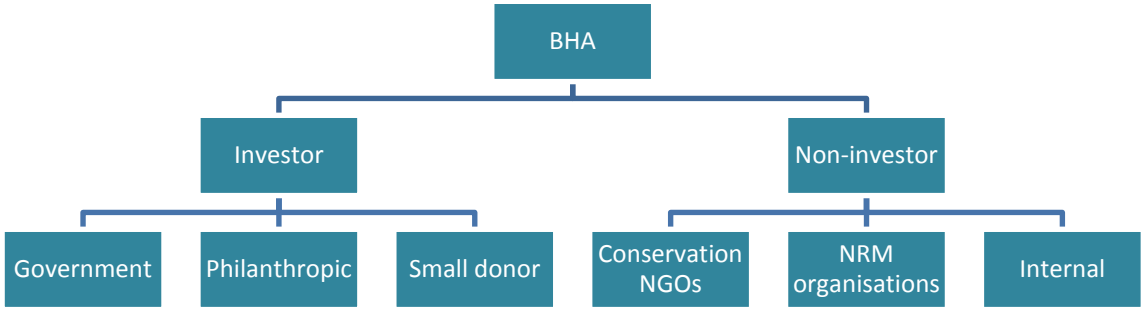

Figure 3: A representation of the BHA stakeholder groups interviewed during Phase 1 of the Increment project

2.1.3 Key issues

Before conducting the stakeholder interviews, the project team reviewed conservation biodiversity outcome reporting frameworks to establish the issues to elicit from stakeholders (Table 1).

Table 1: List of data to be collected from stakeholders, organised by theme

Theme	Information to be elicited
Content	1. Scope (biological, social, process – all or selective) 2. Spatial scale of information (national, property) 3. Level of detail (comprehensive, summary) 4. Timing of information (project 'developmental', project 'conclusion') 5. Source – from outcomes monitoring program, or whether additional information will need to be gathered

Presentation	1. Style of information (text, statistics, pictures, graphics 2. Method of presentation (paper, online) 3. Frequency of reporting (annually, monthly etc)
Context	1. Understanding of BHA's objectives and methods 2. Motivation for support 3. Expectations of BHA 4. Preferred level of engagement with BHA

2.1.4 Data collection and analysis methods

Quantitative analysis of needs and preferences requires that considerable attention be given to preparation of presentation material (e.g. mock-ups, storyboards) that users can score in some way. It is also usually iterative (preferences are refined through cycles of interaction), with user preferences fed back to them by way of revisions of mock-up material.

The project team made an early decision that a quantitative would be too prescriptive at this stage of the project and that instead, a qualitative analysis would be sufficient. This decision influenced the style of interaction with stakeholders and the type of material prepared.

Four standard qualitative methods were considered in designing the data collection and analysis, namely:

- review of existing documentation
- survey by questionnaire
- interview, and
- focus groups.

Primarily because of the decision to proceed with qualitative analysis, the effort and time required to design, implement and analyse a questionnaire style of online and/or paper-based survey (which is a primary data collection method for quantitative assessment) was judged to not be the best investment of resources.

The project team instead used a combination of interviews and focus groups to elicit information. Focus groups were used for small donor elicitation, while interviews were used for all other information stakeholder groups. These were conducted in a semi-structured format to avoid biasing the data and to allow a wide range of information to be gathered. For consistency, the same set of information aids was used for both methods.

A set of ten open-ended questions formed the basis for most of the interviews (refer to Mackey et al. 2007). The questions focussed on eliciting content and providing some context. Presentation preferences were obtained somewhat indirectly with the aid of eight 'mock reporting products'. These products were single page hard-copy examples of the level of detail that could be included in a report, and of the different styles that information could be presented in. The information used in the mock reporting products was hypothetical; however it was based on BHA objectives and reserves. The products reported examples from different biodiversity organisational levels (population, community, and ecosystem) at Level 3 (modelled or ranked results) and Level 4 (story or narrative) of the information.

2.1.5 The engagement program

The engagement program was built around the availability of stakeholders and project staff within a three month period. Fifty-nine individual BHA information stakeholders were interviewed, with each interview lasting between approximately 45 minutes and two hours. Due to time restrictions on a

small number of the interviews, not all questions could be asked at each interview. Table 2 provides a summary of the engagement program.

Table 2: BHA stakeholder groups interviewed, number of interviews and number of participants

Stakeholder Class *		Number of Interviews	Number of Interviewees
Government Investors		1	1
		1	3
Small Investors		2	20
Philanthropic Investors		19	19
NGOs		1	1
NRM Organisations	CMAs/Regions	1	2
	Policy Officers	1	7
Internal BHA staff	Ecology team	1	5
	Reserve manager	1	1
SUM		**28**	**59**

* For reasons of privacy and confidentiality, the names of the interviewees and the particular organisation or department for whom they are employed are not revealed.

2.1.6 Methods of analysis

The form of stakeholder-needs elicitation precluded any form of statistical analysis of the results due to the:

- semi-structured format of the interviews
- uneven sample size (different numbers of respondents in each stakeholder group)
- different treatments (not all of the ten questions was asked at each interview), and
- different interview methods (one-on-one, small group, workshop).

Results were instead analysed by drawing out the major themes from the interviews at different levels of stakeholder aggregation. This was appropriate for the survey type and allowed different levels of detail to be explored and evaluated.

2.1.7 A summary of the interview responses

Seven broad themes were used to tabulate stakeholder responses to the three sets of questions. These responses are summarised in Table 3. Please note:

- one theme of less importance to this document has been removed from the original version of this table, and
- for a more complete discussion of interview responses and the original version of this table please refer to *InCReMent Phase 1: Design and Feasibility* (Mackey et al. 2007).

Table 3: A summary of interview responses from Phase 1

Stakeholder Type	Degree of Understanding	Degree of Confidence	Spatial Scale	Temporal Scale	Types of Information	Presentation of Information
Government Investor	Very good: general**	Not asked^	All scales, including national	Long term trends, including baseline data before actions occurred	1. Consistent with national measures 2. Unexpected outcomes 3. Simple measures 4. Social information 5. Linkage of investment to actions and outcomes	1. Simple text 2. Graphs useful
Philanthropic Investors	Good: specific* (less understanding of BHA overall goal, and meaning of biodiversity)	High	Property and national	Varied responses: long term trends with outputs and species lists annually in time-lag interim; annual trends; five year trends	1. Qualifications of staff 2. Trends over time with benchmarks/baseline data 3. Linkage of investment to actions and outcomes 4. Minimal-nil social information	1. Opinion divided between "Don't reduce text to accommodate photos" and "graphics (maps, graphs, photos) better than text" 2. Simple graphics 3. Scorecard and index ideas good 4. Opinion divided between structure (outcomes first or last)
Small donors	Good: specific* (less understanding of BHA overall goal)	High	Not asked^	Not asked^	1. Environmental/ ecological measures 2. Not financial data 3. No comment on social measures	1. Photos good if they complement story 2. Structured as problem, action, outcomes 3. Simplicity of text and graphics
Conservation NGOs	Very good: general**	Low - more time needed to evaluate	Multiple, depending on what is being measured	Long-term trends, actions & outputs annual in time-lag interim. Not predictions	1. Focus on outcome information 2. Unexpected outcomes 3. Ability to access further info 4. Social information	1. Spatial (maps) good 2. Narrative good 3. Complementary/illustrative photos 4. Not modelling results (eg PVA)
NRM organisations	Very good: general**	Moderate	Multiple, consistent with NRM organisations preferences	Satisfied to have time periods determined by what is being reported. Annual, 5 year, & 30 year trends most useful	1. Consistent with national measures 2. Investment information 3. Social information 4. CMA wants outputs, NRM wants outcomes	1. Visual information, particularly spatial is very effective
Internal	Very good: general** & specific*	High - more time needed to evaluate	Project, property, regional. National not feasible at the moment	Satisfied to have time periods determined by what is being reported. Not predictions.	1. Focus on outcome information 2. Unexpected outcomes information 3. Ability to access further information 4. Social information	1. Combination of styles 2. Don't reduce text to accommodate photos

*Specific: knowledge specific to BHA. **General: knowledge about general role of private nature conservation organisations. ^Not asked due to time constraints

3. The need for improved reporting in conservation

BHA is one of the leading private nature conservation organisations in Australia. It purchases land of high conservation value and manages it for the long term. The area of land under private conservation management outside the formal national estate is steadily increasing, and private conservation organisations are significant landholders in many NRM regions across Australia. Conservation of highly threatened land, water and biodiversity is recognised as a key driver for NRM throughout Australia.

The private conservation sector, which includes NGO's, indigenous land councils, and organisational and individual landholders, has unique demands when reporting on the success or 'return' on investment of NRM actions. There is increasing competition to attract funds in the conservation sector into biodiversity conservation projects and increasing awareness that the effectiveness of current investment is poorly understood. It is also recognised that investors often fail to clearly articulate the expectations of their investment. A part of the reason for this may be that investors need some direction about clarifying what biodiversity outcomes look like and what can or should feasibly be achieved. Reporting on performance requires a comparison of what was expected with what was achieved. It is therefore not possible to assess performance without first clearly stating expectations (Mayne 2003).

Biodiversity outcomes may be deemed to be positive or negative according to a subjective set of desired attributes. In NRM we do not control outcomes (or buy them) but rather seek to influence their occurrence by carrying out certain activities and delivering certain outputs (Mayne 2003). Those resultant biodiversity outcomes that we have actively aimed to achieve are often the result of complex interactions between human management activities and ecological processes. Those organisations whose charter involves biodiversity conservation aim to become effective and efficient at achieving outcomes through the process of adaptive management involving planning, doing, reviewing, evaluating and improving. There are risks at all stages of this cycle; some related to organisational factors and others to ecological factors and lack of understanding of these in many instances. Capturing, storing, using and improving knowledge is fundamental to risk amelioration.

There is wide agreement and growing literature within the Australian conservation sector that there needs to be greater accountability for demonstrating outcomes from investment in conservation activities (ANAO 1997; ANAO 2008; Binning 2001; Fazey and Salisbury 2002; Figgis 2004; Fitzsimons and Carr 2007; Hajkowicz 2008; Hockings 2003; Lowe et al. 2008; McCarthy and Possingham 2007). Binning (2001) stated that:

> Nobody in Australia is able to quantify the contribution of existing investments in private conservation to meeting Australia's conservation objectives……the growth of private lands conservation will be stifled unless accounting systems are established that demonstrate the cost effectiveness of private conservation.

The 2001 National Forum on Nature Conservation on Private Land (The National Trust of Australia (W.A.) 2008) documents among the six key challenges for the future:

> Establishing a mechanism to better address accountability for the funds invested in 'taking care of the bush', by recognising not only the need for accountability, but also the need for resourcing and skills-building to enable that accountability without stifling creativity in a flood of bureaucracy.

and

> Ensuring that reporting processes are in place to enable scientifically-based monitoring of both the human aspects of our work and the progress towards on-ground conservation.

Many leading international nature conservation based organisations such as The Nature Conservancy (TNC), World Wildlife Fund (WWF), African Wildlife Foundation (AWF), Wildlife Conservation Society (WCS), International Union for Conservation of Nature World Commission on Protected Areas (IUCN WCPA) and the Cambridge Conservation Forum (CCF) have invested heavily in systems for demonstrating greater accountability in the effectiveness and impact of interventions.

Nonetheless in order to increase the confidence of investments in conservation there is a distinct need to improve reporting in conservation. TNC points out that conservation groups are generally less equipped than the business community to communicate their successes and failures (Tucker 2005). This can be largely attributed to two factors. Firstly, the long lag times involved in seeing improvements in biodiversity often make it hard to report on performance. Secondly, organisational culture in the conservation sector often does not allow room to learn from mistakes (Tucker 2005).

Central to the ability to tell convincing stories of success in conservation is the need for comparability across different organisations. In this sense, conservation audits have the potential to greatly increase investor confidence (O'Neill 2007). However before standardised audits can take place, organisations need to be at the very least using comparable, if not using common approaches to project management. Salafsky and Margoluis (2003) liken the situation to that of the financial sector before standardised reporting became common and public investors had generally very little confidence because of a lack of credible information. With the onset of the 'Generally Accepted Accounting Principles' investors nowadays have a plethora of knowledge that can be used to decide where best to put their money. It is important to note however that financial audits do not determine whether an organisation is profitable, but rather assess their adherence to commonly agreed upon (and in many cases legislated) standards and protocols (O'Neill 2007). Similarly a conservation audit would not provide information on the effectiveness of a project, but would merely show the existence of particular process steps.

Conservation auditing also provides a platform for internal learning and adaptation. A number of conservation practitioners using the Open Standards or comparable standards have conducted audits against the Open Standard steps (CMP 2004). The Conservation Measures Partnership (CMP) has undertaken conservation audits since 2003, having completed almost 40 from 2003–2007. The audits were conducted to assess the extent to which the Open Standards - or compatible organisation-specific standards - were being followed. The CMP has developed the practice of conservation auditing, 'a review of the planning, execution/implementation, and if applicable, the results of a conservation project or program' (CMP 2008).

In a study of the CMP audits, O'Neill (2007) found that although more than 75 per cent of projects invested a lot of time conceptualising, less than a third had rigorous, formalised M&E systems or procedures for adapting their strategies accordingly (Figure 4). While this is not necessarily surprising, it is only the existence of comparable information that makes such an analysis possible.

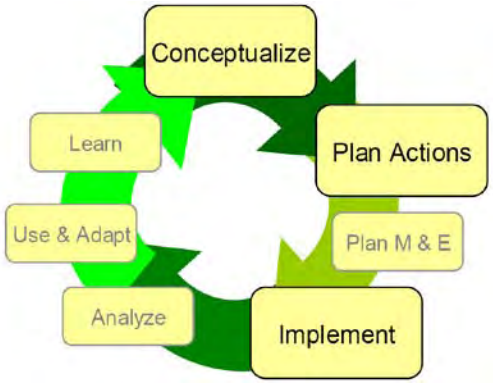

Figure 4: How the Open Standards are being used in practice

Source: O'Neill (2007)

4. Performance reporting frameworks and tools

In the United States, Harris Interactive has conducted a series of surveys gathering public responses to questions about nonprofit organisations . The following surveys sourced from the DARES corporate website (www.donoradvisor.com) lists some important findings.

> An October 2007 Contribute Magazine/Harris Interactive survey of 3,040 adults showed a disturbing 59 percent more concerned today than they were a decade ago that their charitable donations are not being used effectively. A nearly equal number of respondents – 56 percent – expressed growing concern about the "misuse of funds." Nearly half of the respondents (49 percent) were worried about "unnecessary administrative overhead." And 46 percent said they are increasingly concerned about "fraud or theft of funds."

It is clear that TNC takes these surveys seriously and believes promoting its good results in the survey will assist its mission. On its website (www.nature.org), the organisation highlights the fact that 'Harris Interactive® finds 79 percent of those familiar with The Nature Conservancy trust the organization'. The CEO of TNC discusses how the organisation achieves these results:

> These findings, I think, reflect the Conservancy's local focus, organizational values and collaborative, results-oriented approach," said James Petterson, the Conservancy's chief communications officer. "With our organization's strong commitment to accountability and governance we hope to further build on these numbers in the months and years ahead.

With a clear and established link between performance reporting and accountability, it is fair to suggest that effective performance reporting will impact on the trust that donors and potential donors have in organisations.

4.1 What is performance reporting?

The reporting of performance involves the communication of actual results against expected results (Mayne 2003). Performance reporting therefore requires the association of specific measures against areas of an organisation.

The following key elements of a performance reporting frameworks are derived from analysis of Mayne 2003; ANAO 2003; ANAO 2004:

- expected results, sometimes expressed as targets
- methods for measuring the results
- techniques to communicate performance, and
- techniques to assist adoption of performance frameworks.

Performance reporting has potential roles and audiences internal and external to the organisation (ANAO, 2004). Internally, reporting can play a critical role in identifying aspects of an organisation requiring management attention (Poister, 2003). Another common role is to provide accountability to external audiences (ANAO, 2003; Cutt and Murray, 2002). Additionally:

> Measures can also be very useful in communicating to a nonprofit's membership about the performance of the organization. To the lay public, measures impart a sense of focus and businesslike competence on the part of a nonprofit, which can be enormously comforting to donors who want to make sure that their charitable dollars are being used in the most efficient and effective manner possible. Sawhill and Williamson, 2001.

> Without exception, accountability frameworks in non-profit organizations involve a multiplicity of performance measures, reflecting different concepts of success for their various internal and external constituents. Cutt and Murray, 2002.

4.2 What should conservation organisations report on?

While performance reporting in commercial organisations is often heavily focussed on profit and share price changes, it is not as obvious what not-for-profit organisations should be reporting on (Kaplan, 2001; Sawhill and Williamson, 2001). However there is general acceptance that not-for-profits should report on both procedural and consequential components (Cutt, 1998; ANAO, 2004). As Cutt, 1998 explains:

> There is broad agreement that the set of information presented about organisational performance should include both procedural and consequential components. The procedural components include: first, financial information, particularly sources of revenue and the various heads of expenditures; and, second, information on the extent of compliance with authorities of various kinds. The consequential components include various attempts to develop a surrogate for profit in the form of evidence on "value-for money," usually defined to include the use of resources (efficiency) and the achievement of organisational purposes (effectiveness).

The distinction between consequential and procedural components of performance management for conservation organisations is also discussed in Stephens et al 2002. In it the authors describe the procedural components as being about 'how to achieve the desired outcome', while the consequential measures 'the difference made to the state of natural heritage'.

Hayes (1996) suggests that charities can be more accountable by reporting on:

- Fiscal accountability (making sure the money has been spent as agreed, according to the appropriate rules).
- Process accountability (ensuring proper procedures have been followed to provide value for money).
- Programme accountability (providing assurance that the charity is effective in achieving results intended).
- Accountability for priorities (fulfilling user needs appropriately).

Sawhill and Williamson (2001) discuss their work with TNC to identify broad areas of reporting that was designed to align with an adaptation of a balanced scorecard approach traditionally used in the commercial sector:

> The Nature Conservancy has been grappling for a decade with the question of measuring progress toward our mission of conserving biodiversity. After several false starts, we have developed a model for measuring success that is divided into three broad areas: impact, activity, and capacity. This family of measures is best expressed as a set of questions: Are we making progress toward fulfilling our mission and meeting our goals? Are our activities achieving our programmatic objectives and implementing our strategies? and Do we have the resources—the capacity—to achieve our goals?

The Balanced Scorecard approach was developed to enable reporting on 'intangible assets' that have economic value within commercial organisations. It has been proven to be a highly effective strategy to increase organisational performance (Kaplan, 2001). While the applications of the balanced scorecard to non-for-profits discussed in Kaplan (2001) appear highly modified from commercial examples, the principle that all parts of the organisation that contribute to the desired outcome(s) should be monitored is a logical one and supported by other authors including Sawhill and Williamson (2001).

This apparent academic and practitioner agreement that conservation reporting needs to consider both the underlying capacity of the organisation as well as the cost-effectiveness of conservation activities led to the decision to investigate these two areas on more detail. Section 5 is dedicated to 'Management effectiveness' and Section 6 to 'Reporting on organisational capacity'.

4.3 Setting expectations – some general points

As described in sections 4.1 and 4.2, the setting of expectations in the form of objectives and targets is a critical component of any performance reporting framework. Mayne (2003) suggests that it is important to distinguish between 'objectives' and 'performance expectations'**.** Objectives are 'general statements that set the direction of the overall intent of the program', whereas Performance expectations are 'more concrete statements that specify what is to be achieved over time'.

Mayne (2003) argues that both these concepts are required to report on achievement of expected results, particularly for programs where it is the outcomes, not the outputs that of equal importance. It suggests that a program logic or results chain is an effective way of showing expected linkages between activities and outcomes and that some, but not necessarily all outcomes should have specific performance targets associated with them.

For those outcomes that do have targets set for them, it appears that the long standing approach of SMART target setting is still supported:

> The SMART and other tests can be used in relation to measures as well as indicators. Measures are the quantitative representation of indicators. It may not always be practical or economical to use the ideal measure but, on balance, the measure should be of a standard that is acceptable to key stakeholders. ANAO 2004

There are many variations on the meaning of SMART, but ANAO (2004) defines the acronym as:

Specific – clear and concise

Measurable - quantifiable

Achievable – practical & reasonable

Relevant – to users

Timed – range or time limit

Mayne (2003) also suggests that targets can be set using some predictive method or be set as challenges that he refers to as 'stretch targets'. It is important though that when communicating targets the type of target (predicative or stretch) is added.

4.4 Some organisations working to improve the reporting of performance in conservation

The topic of greater accountability in outcomes from interventions is so fundamental to the conservation sector that a number of organisations have been established throughout the world with their core charter to increase the accountability of investments in conservation. These organisations are discussed below.

4.4.1 Foundations of Success (FOS)

Foundations of Success (FOS) works with the conservation community to try and ensure that the approaches and interventions it is using are likely to achieve measurable long-term success. To do this FOS aims to improve the practice of conservation through adaptive management – working with practitioners to test assumptions, adapt, and learn.

FOS is concerned with helping conservation practitioners answer difficult but essential questions such as:

- What should our goals be, and how do we measure progress in reaching them?
- How can we most effectively take action to achieve conservation in complex systems?

- Who are the people and groups that can make conservation happen?

These questions led to the development of the three core foundations of FOS:

Foundation 1: Define clear and practical measures of conservation success.

Foundation 2: Determine sound guiding principles for using conservation strategies and tools.

Foundation 3: Develop and strengthen practitioner knowledge and skills in adaptive management.

Source: www.fosonline.org/

4.4.2 Conservation Measures Partnership (CMP)

CMP is a joint venture of conservation NGOs and other collaborators that seek better ways to design, manage, and measure the impacts of their conservation actions. Core members include AWF, TNC, WCS and WWF. Collaborators include CCF, Conservation International (CI), Enterprise Works Worldwide, FOS, the National Fish and Wildlife Foundation (NFWF), Rare, and the IUCN WCPA. FOS also serves as the coordinator of CMP.

The mission of CMP is to advance the practice of conservation by developing, testing, and promoting principles and tools to credibly assess and improve the effectiveness of conservation actions. CMP will develop a set of mutually acceptable standards for designing, implementing, assessing, and auditing conservation projects.

To fulfill its mission CMP will:

- create a lexicon of approaches to conservation planning, adaptive management, and measuring effectiveness
- validate a set of project cycle or adaptive management standards for the effective practice of conservation
- develop recommendations for effectively reporting the impact of conservation interventions
- develop and validate the process for conducting conservation audits
- conduct a set of pilot audits of CMP conservation projects and activities, and
- communicate regularly with the broader conservation practitioner and donor communities to share what it has learned.

Source: www.conservationmeasures.org/CMP/

4.4.3 International Union for Conservation of Nature (IUCN)

IUCN helps the world find pragmatic solutions to our most pressing environment and development challenges. It is the world's oldest and largest global environmental network - a democratic membership union with more than 1,000 government and NGO member organisations, and almost 11,000 volunteer scientists in more than 160 countries and supports scientific research, manages field projects all over the world and brings governments, NGOs, United Nations agencies, companies and local communities together to develop and implement policy, laws and best practice.

The IUCN's mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. It does this through:

- Knowledge: IUCN develops and supports cutting edge conservation science, particularly in species, ecosystems, biodiversity, and the impact these have on human livelihoods.
- Action: IUCN runs thousands of field projects around the world to better manage natural environments.

- Influence: IUCN supports governments, NGOs, international conventions, UN organizations, companies and communities to develop laws, policy and best-practice.
- Empowerment: IUCN helps implement laws, policy and best-practice by mobilizing organizations, providing resources, training people and monitoring results.

Source: www.iucn.org/

4.4.4 The Centre for Evidence Based Conservation (CEBC)

The Centre for Evidence-Based Conservation (CEBC) has a goal of supporting decision making in conservation and environmental management through the production and dissemination of systematic reviews on the effectiveness of management and policy interventions. CEBC provides a source of evidence for practitioners and coordinates a collaborative network focused on undertaking systematic reviews.

Source: www.cebc.bangor.ac.uk/

5. Management effectiveness

This section of the literature review attempts to provide some clarity on what is meant by success in the conservation sector, and how we might go about evaluation given the multitude of approaches around the world. To this end we firstly provide some discussion on the confusing array of language that is used in the field. Secondly, we offer a short description of a number of the most widely used approaches and frameworks for assessing progress towards conservation goals.

5.1 The importance of management effectiveness

It is agreed in the literature that the ability to have sound organisation processes in place to plan, observe, record, evaluate and modify practices improves the capacity and quality of outcome reporting (ANAO 1997; ANAO 2008; Binning 2001; Fazey and Salisbury 2002; Hajkowicz 2008; Hockings 2003; Lowe et al. 2008; Mayne 2003; Macarthy and Possingham 2007).

There are a multitude of frameworks that aim to integrate these processes – they are often referred to as management effectiveness cycles, improvement cycles, adaptive management cycles or planning cycles. The use of such cycles in conservation is well reported (Cifuentes et al. 2000; Hockings et al. 2000, 2004 and 2006; Jones 2003; Tucker 2005; TNC 2000, 2003 and 2004; Stem 2003 and 2004).

> The field of conservation suffers from having no common approaches for measuring bottom-line success, describing assumptions made by practitioners, comparing projects' effectiveness and efficiency, and capturing learning (Salafsky and Margoluis 2003, p.120).

Conservation practitioners around the world have struggled as much as any sector to find robust mechanisms for describing the extent to which they are achieving their objectives. Yet the conservation sector is also faced with unique challenges when it comes to evaluating effectiveness. These challenges include the long lag times associated with changes in biophysical resources, and our poor understanding of the complexities of ecosystems and how they react to management interventions. Globally there has been much innovative work attempting to get around these problems. However, it is clear that as the conservation sector matures there is a need for standardised approaches to evaluating and reporting on conservation outcomes.

As discussed in Section 4 of this review, the evaluation of management effectiveness is a necessary element of a comprehensive and effective performance reporting framework. The remainder of this section reviews the concept of management effectiveness and existing management effectiveness frameworks for use within the Increment approach.

5.2 About management effectiveness

The evolution of biodiversity monitoring and the evaluation of conservation management can be traced back to the most rudimentary biological surveys and population monitoring of the 1700's and early 1900's. These approaches aimed to improve conservation decision-making and management through the collection of biological data. More recently, environmental impact assessments and numerous variations, such as social impact assessments and strategic environmental have provided a more holistic approach to assessment.

The conservation sector has also benefited from lessons learned through a similar progression in measuring management effectiveness in other sectors. International development, education and social services, public health and family planning and the business sector in general have all provided significant input into advances in techniques for measuring effectiveness.

Delineation must be recognised between approaches for measuring the 'effectiveness' of conservation actions with those that measure the 'effect' of actions. The difference being that,

measuring the effects of conservation actions implies the need to identify causality between an action and its direct impacts, both intentional and unintentional. This requires scientific observation and analysis and objectivity. Conversely, measuring the 'effectiveness' of conservation actions requires further action, comparing these effects with the objectives for conducting the conservation intervention. That is, using information about the effects of conservation actions, to assess whether conservation objectives have been, or are being met (Guedes Vas et al. 2001).

The review presents and critically evaluates numerous approaches to measuring the 'effects' of management actions , as well as following on to measure the 'effectiveness' of these actions in achieving conservation objectives, or targets.

There are numerous factors that confound efforts to measure biodiversity outcomes.

- Firstly, biodiversity often cannot be measured directly and therefore must be measured via suitable indicators – here lies difficulty in selecting appropriate indicators.
- Secondly, there is often a time lag between carrying out conservation interventions and the ensuing outcomes, sometimes in the order of decades.
- Thirdly, results are often very complex and interrelated to other management actions, or extrinsic factors, meaning that causality is almost impossible to determine.

As a result, many systems for measuring conservation performance focus on indirect measures of biodiversity performance, measure activities, inputs, processes or outputs, rather than outcomes.

The challenge of measuring and evaluating the effectiveness of protected area management has been approached from a number of angles. Variations in the objectives, socio-political environment, organisational characteristics and external drivers of programs for measuring management effectiveness have resulted in an array of approaches.

Generally speaking, approaches range in temporal scale, from rapid assessments to in-depth programs that are designed to inform adaptive management. They range in geographic scale from reserve-based to landscape or national scale programs. They range in duration between one-off status assessments, to long-term monitoring programs.

Within Increment we take the term 'management effectiveness' to relate to how conservation is practiced, or the business of *doing* conservation. Management is what conservation managers do, and effectiveness is the extent to which their actions impact on their objectives. In relation to protected area management, according to Hockings et al. (2000) the concept is comprised of three elements:

1. The **design** of the protected area in terms of for instance size, shape, buffer zones, ecological representation, connectedness etc.
2. The **appropriateness** of how management responds to challenges such as planning, training, capacity building, implementation etc.
3. The **delivery** of the actual stated objectives of the area including both ecological and social aspects.

An inherent assumption in the management of protected areas is that they are managed to protect the values and natural resources that they contain (Hockings et al. 2006). Management effectiveness will therefore be determined firstly by the clear identification of these values and resources, and secondly by the ability of management to protect them. Management effectiveness systems will clearly be different under different circumstances.

Central to management effectiveness is the ability for management to be adaptive to new threats and opportunities, and to learn from the past effects of management intervention. It is what good managers are doing all the time when the link between intervention and outcome is relatively clear (Hockings et al. 2006). However the reality of day to day operations means that managers often do

not have the time or information to analyse many of the longer term results of actions. This is particularly the case when multiple factors contribute to outcomes, and the causal link from activities is not clearly understood.

5.3 Management effectiveness evaluation

It is telling that within the conservation literature there is a huge amount of ambiguity around terms and concepts for assessing the achievement of conservation objectives. Terms such as 'evaluation' are used widely, yet often reflect quite different understanding and intention.

Similarly there are various ways of describing what is trying to be achieved, which further adds to the confusion. For instance, TNC refers to 'conservation success' as the goal of its work in biodiversity conservation. Conservation success is defined as 'the combination of three outcomes: the maintenance of viable biodiversity, abatement of critical threats, and effective protection and management of places where we take action with partners, (TNC 2004, p.7). These measures aim to increase the ability to quantify 'conservation impact', which is 'the direct contribution of the Conservancy and our partners to conserving biodiversity' (TNC 2004, p.7). It is difficult to determine what the overall objective of conservation success is and how it is to be measured. Far from being a criticism of TNC, it is indicative of just how difficult it is to define simply what we are trying to achieve.

WCPA has been developed through the distillation of a suite of management effectiveness frameworks used throughout the world. The framework uses the term 'management effectiveness evaluation', which is defined as 'the assessment of how well the protected area is being managed – primarily the extent to which it is protecting values and achieving goals and objectives' (Hockings et al. 2006, p.xiii). Cifuentes et al. (2000, p.12) refer to 'effective management' and define it as, 'the combination of actions that make it possible to satisfactorily fulfil the function for which the area was created, based on the area's particular traits, capacities and context'.

While it is not important which name is used, it is crucial that there is a common understanding of what we are actually trying to do, and the different elements of management. Salafsky and Margoluis (2003) suggest it is characteristic of an emerging industry that there are so many ways of doing and talking about similar things. Yet there is a real risk that the conservation industry will become swamped in a multitude of models, approaches, frameworks and jargon. There is thus a distinct need across the sector not only for standardised language, but for standards in measuring and reporting on conservation success. In recognition of this the CMP was formed by a number of the biggest conservation organisations in the world. CMP (2004, 2007) has since instigated the development of the 'open standards for the practice of conservation' in an attempt to provide a common framework for adaptive management. The standards are 'open' in the way that open source software in the IT industry works, where any practitioner has the chance to update and enhance the product, and there is common ownership (CMP 2004).

5.4 Frameworks for evaluating management effectiveness

Over time organisations have developed various ways of monitoring impacts of management, not surprisingly resulting in a multitude of different systems for planning and evaluation. We present here a number of the most widely used approaches and frameworks in the conservation sector.

5.4.1 Logical frameworks

Logical frameworks or 'Logframes' became popular within the development sector in the seventies, and have been used extensively as a tool for planning and assessing projects (Owen 2006). Logframes are a form of 'program logic' or expression of the theory behind how activities will have an impact on longer term objectives. Logframes are characterised by a matrix (shown in Table 4

below), which includes indicators for measuring each level of the hierarchy, how you would propose to gather measurements, and any assumptions or risks to each level.

Table 4: Generic Logframe matrix

Activity description	Indicators	Means of Verification (MoV)	Assumptions
Goal/Impact	Indicators	MoV	
Purpose/Outcome	Indicators	MoV	Assumptions
Component Objectives/ Intermediate results	Indicators	MoV	Assumptions
Outputs	Indicators	MoV	Assumptions

Adapted from AusAid (2005)

Logframes can be used to form part of a broader M&E approach, but do not represent an evaluation approach on their own. They offer an excellent planning tool but have been criticised for their rigidity and their inability to model change in any other than a linear fashion (Stem et al. 2005). Nonetheless Logframes provide a mechanism to show the causal links between activities and outcomes.

A survey by the William and Flora Hewlett Foundation found that only one in ten projects it supported could produce a model that showed explicitly the causal links between their activities and what they hoped to impact upon (Christensen 2003). However in order to be able to clearly articulate expectations of an investment we need to have firstly an understanding of the causal links, and secondly a mechanism for adapting our approach as our understanding of the links grows. One way to do this is to develop a program logic model.

Program logic is the rationale behind a program – what are understood to be the cause and effect relationships between program activities, outputs, intermediate outcomes and ultimate outcomes. Represented as a diagram or matrix, program logic shows a series of expected consequences, not just a sequence of events. Owen (2006) views program logic as a form of program design clarification, which can be used both in a formative sense (design or re-design) and in summative evaluation (testing the model).

5.4.2 RAPPAM

The Rapid Assessment and Prioritisation of Protected Area Management (RAPPAM) methodology was developed by WWF. It builds on the generic structure of the WCPA framework and WWF describe it as 'one of several ongoing efforts to develop specific assessment tools that are consistent with the WCPA framework' (Ervin 2003, p.5). The methodology is primarily designed as a tool to compare management effectiveness at a broad scale across several protected areas. It is noted that the methodology is most successful when it is used to compare protected areas with similar objectives (Ervin 2003). This presents difficulties in setting priorities across diverse project areas.

A good example of how WWF's RAPPAM methodology is applied in practice is documented in a case study from Bhutan (Tshering 2003). The methodology is used to assess management effectiveness in four protected areas. The areas are scored on various criteria covering the six elements of the WCPA framework, by conducting a series of participatory workshops and strategic interviews with relevant stakeholders. Interesting from the perspective of Increment is that evaluation is given little specific thought in the analysis. While research and monitoring are considered, there is no mention of strategic, periodic evaluation of expected outcomes. The reason for this is likely to be that how to go about evaluation is not clearly defined within the WCPA framework. This is not necessarily a criticism of the WCPA framework, as the intent to be widely adaptable makes it necessarily unspecific in many areas.

In summary the RAPPAM methodology has a different purpose to Increment. It is intended to be used as a comparative tool across different protected areas. Further, it does not promote a specific

focus on evaluation as defined by the Increment project. Nonetheless it represents a valuable working tool for use by managers and policy makers, particularly in developing countries.

5.4.3 5-S framework: Measures of Success[1]

TNC's Five-S framework for site conservation was developed in 2000 based on its earlier approach *Conservation by Design*. The framework serves as a guide to planning for site management, including the development of outcomes, and corresponding measures of success (TNC 2003 and TNC and FOS 2003). The framework was released with a Microsoft Excel based workbook to guide practitioners through the process.

The 5-S framework is based around assessing and planning for the "five S's":

- **Systems:** the natural processes of a site, including appropriate targets based on these.
- **Stresses:** types of degradation and other afflictions at the site.
- **Sources:** the causes of the stresses.
- **Strategies:** activities to abate sources (threat abatement), plus any ongoing stresses (restoration).
- **Success:** a measure of both threat abatement and biodiversity health.

The framework has been widely applied around the world mainly, although not solely, for TNC sites. It provides a systematic approach to planning for and analysing the achievement towards what TNC coins 'conservation success' (TNC 2003). As we stressed in the previous chapter, we believe it crucial to be absolutely clear about what it is we are trying to achieve in conservation. Thus a brief discussion is warranted on how TNC has attempted to clarify their objective in a straight forward manner that is easy to communicate.

Conservation success is measured firstly by biodiversity health, which is defined as the successful conservation of 'focal targets'. These are significant species and ecosystems determined crucial to the success of the site. Secondly conservation success is measured by how well threats have been abated. To get around the issue of the long time frames often needed to see changes in these indicators, TNC also uses a proxy measure of 'conservation capacity'. This is judged by the existence of various aspects of management considered crucial to achieving good conservation outcomes. This is consistent with the approach encouraged by the Open Standards (CMP 2007) to achieve comparable, auditable management processes across various organisations. However the existence of good management structures does not necessarily translate to successful outcomes, nor on its own provide a sound basis for investor confidence.

The 5-S framework does encourage managers to develop plans that show the 'logical linkage' between systems, stresses, sources, strategies and success (TNC 2003, p.VIII-7), however there is no defined way to do this within the framework. The causal linkages that are so crucial to evaluation within the Increment model could in our opinion potentially remain implicit in the 5-S framework.

A weakness identified in the first draft of the 5-S framework was that the framework created TNC specific jargon, making it difficult to communicate with organisations using other systems (TNC and FOS 2003). Strangely enough however, neither the WCPA framework, nor the IUCN are mentioned in either the original or enhanced document. This is worrying as it suggests that while the WCPA framework has attempted to encourage global standardisation of terminology, the largest private conservation organisation in the world is developing its own system in parallel. The 5-S framework does fit neatly into the WCPA framework, and some elements of it have been used to inform the application of the WCPA framework (Hockings et al. 1999). TNC has also been supportive of attempts such as the CMP. It is also important to note that the 5-S framework is a site conservation planning

[1] Note at the time of publishing this document the 5-S framework had been replaced by the Catchment Action Planning process see http://conserveonline.org/workspaces/cbdgateway/cap/index_html

tool, whereas the WCPA framework is a much broader framework that could be applied to both site based or regional conservation planning.

5.4.4 Open Standards for the practice of conservation

The adaptive management framework developed by the CMP is a tremendous attempt to address many of the issues discussed in this paper. The CMP framework is developed in the spirit of innovation, openly and honestly. Since version 1.0 of the standards was released in 2004, CMP has received feedback from organisations around the world that have been trialling the framework. The recent release of version 2.0 (October 2007) sees a number of refinements to the framework incorporating this feedback.

Similar to the WCPA framework the Open Standards are not site-specific, so they can be applied at a variety of scales. Also they are intended to be broad enough to be able to be adapted to suit various situations, and in this sense are to be considered a 'framework' rather than a distinct recipe for how things should be done. For example TNC has adapted the standards to suit its site specific, organisation specific 5-S framework, and yet its project design still remains comparable to others using the standards. The intent of the standards is thus to provide a common platform to communicate amongst organisations, and thus to increase efficiency and effectiveness within conservation management (CMP 2007).

Figure 5: Open standards adaptive management cycle

Source: CMP (2004)

5.4.5 WCPA framework

The development of the WCPA framework was facilitated by the IUCN in the late 1990s as it recognised the need for a generic approach to assessing management effectiveness within protected areas (Hockings 2003). The framework provides an evaluation framework that is flexible enough to allow for specific evaluation methodologies to be used within it, yet structured enough to provide a common platform on which to communicate lessons in management.

The framework proposes six indicators or 'elements' within three distinct project phases. These elements and phases are presented schematically in **Error! Reference source not found.**, which also epicts the need for evaluation to occur at all stages.

It is important to note that the WCPA framework does not prescribe a particular 'system' for evaluating management effectiveness, nor is it in itself a methodology. The authors of the framework recognise that no one system of evaluation is likely to be appropriate to suit the various different protected areas around the world and their contextual needs (Hockings et al. 2000). Indeed they conclude that one system would not be desirable and that diversity and innovation should be encouraged. Too much diversity however limits the ability to learn across organisations, thus the rationale for a 'framework' that provides a common platform on which to communicate, yet enough room to tailor the evaluation to localised conditions. The distinction between approaches and frameworks is described well by the CMP (2008):

> project management "approaches" (a process broken down into a series of steps) and project management "frameworks" (a way to describe the relationship between different components of a project).

Figure 6: The WCPA management effectiveness framework

5.4.6 The Monitoring, Evaluation, Reporting and Improvement (MERI) framework

There has been a concerted effort in recent years by the Australian Government to improve M&E by the 56 regional NRM bodies. This is highlighted by a recent report by the Australian National Audit Office (ANAO) (ANAO 2007) of Australia who repeated earlier calls for the establishment of robust M&E frameworks, and also in the recent investment that the government has made in capacity building training around the country. The trainings have followed a seven-step process to develop a framework against the seven-steps but with no specific structure beyond this for how the frameworks should operate.

The Monitoring, Evaluation, Reporting and Improvement (MERI) approach relies heavily on the explicit statement of how it is believed change will occur as a result of an intervention. It is suggested that this be explained through the creation of a program logic model. The program logic then serves as the foundation for the rest of the framework. Importantly however the program logic is only an expression of how the world works, and will only be as smart as the knowledge that is put into it.

Table 5 below displays the M&E cycle as intrinsic to the program cycle, and shows that knowledge gathered through M&E should inform the subsequent design of the intervention. The MERI approach is to feed this new knowledge back into the refinement of the program logic model, which will then inform the ongoing project, and help to manage adaptively.

Table 5: A description of the MERI approach

Step	Tasks
One	Scope the MERI strategy
Two	Clarify the program logic • clarify the long term outcomes • identify desired changes at all levels of the logic • interrogate the logic • identify key assumptions
Three	Revise or set measures of success • longer-term targets • intermediate targets • outputs and milestones
Four	Develop a meaningful monitoring system • consider what would be meaningful to measure • identify monitoring needs • develop monitoring questions • identify and list all existing data • determine what new evidence is needed to fill gaps • determine how it will be collected • consider how it will be synthesised • consider monitoring unexpected outcomes
Five	Consider strategic evaluation • identify evaluation needs • develop key evaluation questions • consider who will conduct the study • select methods for addressing evaluation questions • consider ethics, design, and analysis • consider how it will be reported
Six	Consider effective reporting mechanisms • full evaluation reports • Performance Story Reports • report cards
Seven	Develop a reflection, learning and improvement strategy

The MERI approach as outlined in Figure 6 is specifically developed for regional NRM bodies in the Australian context.

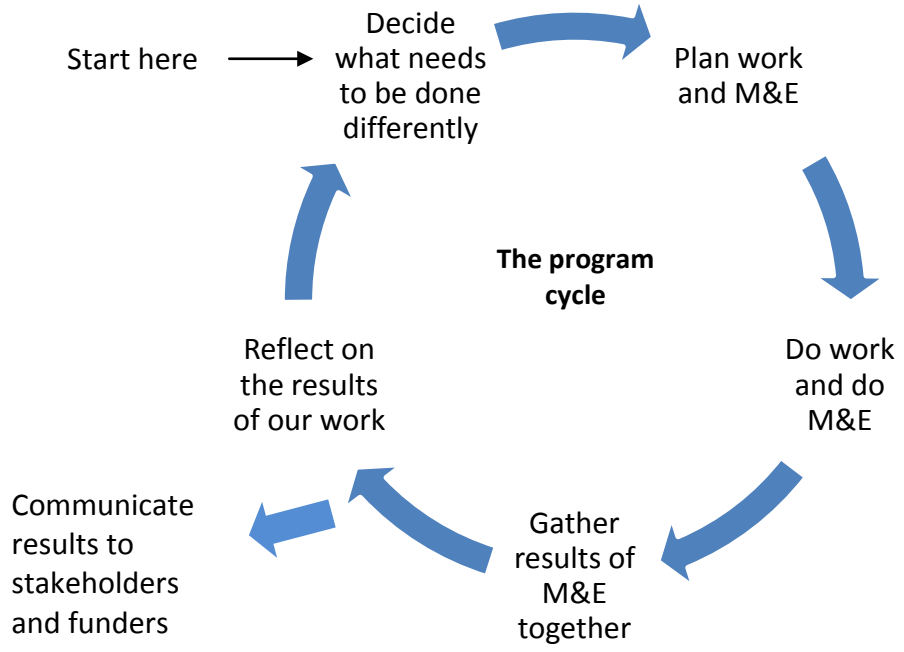

Figure 6: The program cycle with embedded monitoring and evaluation

Source: Dart (2008)

5.5.7 Performance story reporting

In the past, performance measurement was often about reporting on outputs (Mayne 1999, 2003). Outputs are much easier to report on than outcomes, but the information they provide is often inadequate and can be misleading. For instance an output of 100 farmers at a workshop about better grazing practice is easy to report on, but says nothing about how many of those farmers will implement changes on their property when they leave the workshop. While the longer term outcome is to achieve less sediment runoff from grazing properties, the causal relationships between holding a workshop and the long term outcome are not often clear. There are also a number of other factors that could influence the outcome, making it more difficult to be accountable for outcomes. Added to this is the fact that they are generally more difficult to measure than outputs. Nonetheless, measurement only of outputs will not provide information on performance towards objectives.

In recognition of this the Australian Government has made a concerted push to encourage regional NRM bodies to report on outcomes, as well as on standard outputs. The problem of course is that it is a difficult task to report on outcomes, and there are precious little tools available, or experience in doing it in the regions. A tool is therefore required that can show the causal links between activities and long term outcomes, where there is often little empirical or scientific data available. Such a tool would also need to be flexible enough to be applied at a variety of spatial scales, and in various different socio-ecological settings.

There is a lot of hope riding on Performance Story Reporting (PSR) to be able to achieve these things. The recent Auditor General's report called specifically for PSR to be developed to report on outcomes at the regional level. There is also a clear recognition by Hockings et al. (2000) of the need for a tool that can report on outcomes in a relatively cheap, quick, easy manner, and which provides written reference. The WCPA framework assumes that M&E at the outcomes level is so costly and time consuming that it should only be done in the neediest of cases. PSR as a tool has the potential to challenge this assumption.

A major strength of the PSR approach is that it manages to bring together different types of evidence, both quantitative and qualitative, into a meaningful narrative. Yet it must be stressed that PSR offers only one particular type of evaluative enquiry. It drills down to detail to answer one Key Evaluation Question related to the 'contribution' towards outcomes from one particular investment (Dart pers comm). It does not answer questions about appropriateness or about the trends and state of the environment. Therefore on its own a PSR is not a silver bullet for reporting on conservation success. However coupled with other types of reporting such as State of the Environment or Report Cards, it provides a unique way to report on our contribution towards long term, complex outcomes.

5.5 The assessment of cost-effectiveness of conservation actions

5.5.1 Return on investment (ROI)

Increased scrutiny has driven the conservation industry towards financial accountability. Pressure from donors to show that there is a sizable conservation impact from investment in projects is growing. This has led conservation organisations towards the Return on Investment (ROI) framework (O'Connor et al. 2003).

There are three ways in which ROI can be employed; the first is its use in selecting among prospective projects, the second is comparing potential solutions and the third is evaluation after project completion (Powell 2002)**.** Reporting on the performance of investments in various formats was identified as an important potential contributor to investor confidence in the stakeholder interviews conducted in Phase 1 of the Increment project. It was also stated as an original goal of the project that the approach would facilitate calculation of the return on investment for conservation actions (Mackey et al. 2007). It is for these reasons that the use of ROI in conservation was further investigated, with a view to incorporating it into final approach.

5.5.2 The basics of ROI

Traditional economic theory assumed that the only goal of an organisation is to maximise profits or returns (Hardwick et al. 1982), that the purpose of all investments is to make profits. ROI is a common measure of profitability (Rajan et al. 2007) as it takes into account the return in relation to the investment (Naidoo and Ricketts 2006). ROI is an excellent way in which to consider both these elements, and in its most simple form can be represented by the following equation (Trotman and Gibbons 2005) -

ROI = return / investment

Returns are defined as the total benefits minus the total costs (Bekefi 2000) and investment relates to both the capitalised and expensed items (Powell 2002). The above equation is often multiplied by 100 to express the ROI as a percentage. Investment generally requires that an organisation foregoes current capital earnings for future profitability (Wang 2002). It is important that both the return, financial or non-financial, and the investment are measurable (Trotman and Gibbons 2005). There is some disagreement as to what is an acceptable level of return, with the range of 10 - 35% being suggested as an adequate level (Trotman and Gibbons 2005, Mmopelwa 2006)

The ROI cost-benefit analysis is a useful and common measure of profitability, yet it has been shown that there are issues in transferring this accounting technique to other industries. The desire to facilitate such a transfer may arise from the advantages that the ROI calculation has over other cost-benefits analyses, such as straightforward comparison between different projects and ease of use.

The accounting measure of profitability was principally designed to deal with dollar figures, and thus does not cope well with non-financial outputs. Many industries have encountered this problem when they attempted to use ROI. The IT industry is one that has further developed the ROI framework to incorporate, with the use of specific objectives, non-financial benefits.

5.5.3 The advantages of ROI

The major benefits of the ROI measure are that it is easily understood by most people and the ability it gives the analyser to compare the profitability of different projects as it is scale free (Trotman and Gibbons 2005; Bessette 2003). The one major drawback of the ROI framework is that only economic outputs may be included (Bessette 2003). While the non-financial outputs are noted as important, they are often excluded from ROI analysis as they cannot be properly taken into account (Powell 2002). Even when non-financial benefits are incorporated it often involves the monetary evaluation of otherwise qualitative outputs, such as social benefits (Hardwick et al. 1982).

5.5.4 The application of ROI to conservation management

ROI applied to conservation aims to maximise the units of a clearly defined objective returned per unit of investment. As a simple example, the number of species conserved could be divided by the value of the land that would need to be conserved. Not only does ROI have the potential to assist in the selection of projects, but it can also generate better advice, produce more effective conservation and assist communication with donors (Murdoch et al. 2007).

The conservation industry has thus far only used ROI to facilitate prospective decision making. When ROI is used to evaluate potential projects it must build in an assessment of project risk. Comparisons in this case essentially involve 'expected' ROI, which is an estimate of the ROI given uncertainties in the returns and investment costs to be experienced. This means that an assessment of risk associated with a project is an important part of assessing its potential return on investment before that investment has been made. It is also important that all weights (major and sub criteria) total 100 percent and that sub-criteria are scored on a standard scale. It is recommended that committees are used to score the sub-criteria so that decisions are equitable. The total weighted score is then used to compare alternatives to identify the best project (Nguyen 2004).

Even though the use of ROI has been limited to selection of projects in the past, it has been noted that the potential exists for post-project evaluation of conservation outcomes with the ROI framework, perhaps via the use of a weighting system (Nguyen 2004). The challenges of doing this include the incorporation of threats, averted species loss and accurate assumptions regarding the effectiveness of conservation actions (Murdoch et al. 2007).

The effectiveness of ROI as a prioritisation tool has been modelled against other approaches in Underwood et al. (2008). The scenario calculated the number of species that remained using the selection of approaches that included:

a. Areas with endemic species (hereafter Endemism): funding is allocated proportional to the number of endemic vertebrate species in each ecoregion paralleling the Endemic Areas approach.
b. Crisis Biomes: funding is allocated proportional to an index which reflects the percent habitat converted divided by the percent habitat protected in each ecoregion.
c. Areas with high threatened species per dollar (hereafter Threatened species/dollar): funding is allocated proportional on an index which reflects the number of threatened species divided by the cost of land in each ecoregion, (see Ando et al. 1998 for further details).
d. Random: each year the annual budget is allocated to any number of the 39 ecoregions at random. (Underwood et al. 2008)

The simulation found that use of ROI resulted in 32-69% more species protected than if the other priority setting approaches were used.

6. Reporting on organisational capacity and impact

As discussed in Section 4 of this review, there is clear agreement between academics and conservation practitioners that performance reporting by conservation organisations needs to adopt the principle behind the balanced scorecard. That is, aspects of the organisation that contribute to the end goal of the organisation need to be assessed for performance in addition to achievement of those goals themselves. In addition, not-for-profit organisations should not be exempt from the growing expectation of triple bottom line reporting, also referred to as sustainability reporting.

This section by no means attempts to be a comprehensive review of all these areas, however discussion of some key concepts and listing of potential helpful resources for the development of indicators in these areas is provided in this section. Areas of reporting related to capacity and impact reviewed in this section are:

- financial performance,
- sustainability reporting, and
- governance.

While there may be other areas of performance that would be important to measure for internal reporting purposes, the above selection has been made for review based on stakeholder responses in Phase 1 of the Increment project. Please also note there has been no attempt to cover the regulatory reporting requirements of any type of conservation organisation.

6.1 Financial performance measures

Financial performance is as critical for not-for-profits as it is for commercial organisations and just as for commercial organisations, the measure will generally relate to what is coming in versus what is going out.

The Institute of Chartered Accountants in Australia has recently released its second version of *Enhancing not-for-profit annual and financial reporting* (Leslie 2009). In it, they list a selection of reporting areas that not-for-profit organisations should consider in annual reports. The financial reporting areas suggested in the guide are presented in Table 6.

Government based conservation organisations have all their financial reporting requirements specified by the regulating body, however it would be useful for government organisations to assess the value of some of the indicators in Table 6. Oxfam Australia presents their use of supporters' money in another simple, easy to understand fashion (Figure 7). The applicability of these ideas to the conservation sector needs to be matched with the audience that is trying to be reached, and its level of understanding.

Figure 7: "For every dollar you donate..."
Source: Oxfam Australia (2008)

Table 6: Suggested financial reports for the annual reports of not-for-profits

Area of reporting	Details of suggested reporting
Funding	Provide more detail about sources of funds as well as fundraising activities. Although the quantum of funds raised and used by not-for-profit organisations can be determined from their financial statements, additional information on the sources of funds would enhance transparency. Consideration should be given to providing information regarding: • the processes to secure government funding • policies for public fundraising • which costs are included in fundraising costs • the revenue models and the NFP's approach to funding, and • the use of websites to generate donations.
Investments	Provide more insightful reporting of investments and investment policies, including: • management of investments, including the involvement of any third parties such as investment advisors or managers • any limitations on investments, and • the performance of the investment portfolio against short- and long-term targets or performance objectives.
Reporting efficiency and effectiveness – charitable bodies	Charitable not-for-profit organisations should identify and include in their annual reports those process key performance indicators (KPIs) that are relevant to their mission, objectives and activities. At a minimum these should include, where applicable: • the ratio of total costs of fundraising to gross income obtained from fundraising • the ratio of net surplus from fundraising to gross income obtained from fundraising • the ratio of total costs of services provided by the fundraiser to total expenditure, and • the ratio of total costs of services provided by the fundraiser to gross income received. For as long as fundraising ratios remain the generally accepted means of reporting process efficiency, the ratios should be separately disclosed. Fluctuations in these ratios from reporting period to reporting period should be explained in the annual report, particularly where the not-for-profit organisation is investing in its funding coterie. Such transparency communicates to the broader community that this investment is required and necessary to support the ongoing operations of the charitable not-for-profit organisation.
Enhancements to financial reporting	This includes a range of additional financial reports suggested by the Institute based on research they have conducted. See page 9 of Leslie (2009).

Source: Leslie (2009)

6.2 Sustainability reporting

There is an increasing expectation that organisations will report on social and environmental impacts in addition to economic areas of interest:

> Sustainability concepts have dramatically widened the scope of measurement options and leading organizations are grappling with sustainability reporting, but there is no sign of consensus on a common reporting standard and the competing frameworks are impossibly complex. (Hubbard 2009)

While there are no standards yet in existence, there are international initiatives that are being broadly supported. One of these is the Global Reporting Initiative (GRI). The GRI has released a reporting framework with associated indicators in the following areas:

- economic
- environment
- human rights
- labour
- product responsibility, and
- society.

Refer to www.globalreporting.org for more information and indicator guides for all the above listed areas.

6.3 Governance

Table 7 provides a brief introduction into the potential areas for performance assessment in NRM governance. Note these were developed particularly for NRM Regional Bodies.

Table 7: A summary of governance principles for regional NRM bodies

Principles	Main elements
Legitimacy valid exercise its responsibilities	• an organisation's valid authority to undertake: o of authority – conferred by democratically mandated means, and/or o earned through stakeholders' acceptance of that organisation's authority; • devolution of power to the lowest level at which it can be effectively exercised; • authority is exercised with integrity and commitment.
Transparency openness of decision-making processes	• visibility of decision-making processes; • clarity with which the reasoning behind decisions is communicated; • ready availability of, and access to, relevant information about the governance and performance of an organisation.
Accountability responsible organisational conduct	• allocation and acceptance of responsibility for decisions and actions; • the demonstration of how these responsibilities have been met.
Inclusiveness broad engagement of stakeholders	• availability of opportunities for stakeholders to participate in and influence decision-making processes and actions.
Fairness equitable and genuine engagement of stakeholders	• distribution of NRM responsibilities to individuals and organisations commensurate with their potential or obligation to assume them; • respect and attention given to stakeholders' views;

	• consistency and absence of personal bias in decision making; • consideration given in decision making to cost/benefit distribution.
Integration coordination among decision-making levels, and consistency across policy planning and management instruments	• connection between, and coordination across, different levels of governance; • connection between, and coordination across, organisations at the same level of governance; • alignment of priorities, plans and activities across governance bodies.
Capability ability to effectively implement allocated responsibilities	• skills, leadership, experience, resources, knowledge, plans and systems that enable organisations and the individuals who work for them, to deliver on their responsibilities.
Adaptability ability to adapt to changing conditions, knowledge and performance	• incorporation of learning into decision making and implementation; • anticipation and management of threats, opportunities and associated risks; • systematic self-reflection on individual, organisational and system performance.

Source: Davidson (2008)

7. Evidence-based practice in conservation

7.1 What is evidence?

According to http://dictionary.reference.com/browse/evidence, evidence is defined as:

> that which tends to prove or disprove something; ground for belief; proof.
>
> something that makes plain or clear; an indication or sign: His flushed look was visible evidence of his fever.

Evidence is obtained in order to try and make the right decision by establishing a fact or point in question. Evidence never speaks for itself but needs to be interpreted using filters of models, assumptions and analysis. Some of the attributes that may be used for evidence are accuracy, credibility, objectivity, relevance, provenance and weight. Pieces of evidence may corroborate with each other, conflict or explain away its apparent message (www.evidencescience.org/info/index.html).

In law, judges and juries use evidence to determine responsibility and render justice (Miller 2006). Law has well defined evidentiary standards, setting different standards of proof according to the consequences of the decision with life and liberty valued most highly. The standard of proof required in criminal matters is deemed to be 'beyond a reasonable doubt' and is sufficiently high that a person can be put to death. In cases of child custody, involuntary commitment or to punish a person for a frame of mind driven by malice, oppression or fraud, evidence must be 'clear and convincing' whereas in civil matters evidence may be used to establish a 'balance of probability greater than 51%' (Miller 2006).

Courts of law usually have to find that certain facts exist before pronouncing on the rights, duties and liabilities of the parties and the evidence they receive in furtherance of this task is described as admissible evidence (Heydon 2004). Relevant evidence (admissible) is defined as evidence that if accepted, could rationally affect, whether directly or indirectly, the assessment of the probability of the existence of a fact in issue in the proceeding (www.austlii.ed.au/au/other/alrc/publications/reports/38/ALRC38Ch9.html).

Science strives for objective certainty seeking irrefutable evidence that can hold up to repeated tests of falsification. This standard of proof affords only a narrow range of evidence.

In medicine evidence is used to improve health and make decisions on how to prevent, diagnose and treat disease. Evidence may be used to test a research hypothesis with strict rules surrounding the admissibility of evidence. Rycroft-Malone (2004) in the development of a framework to guide the implementation of evidence-based practice in the medical sector proposes that evidence should be considered to be knowledge derived from a variety of sources that have been subjected to testing and has found to be credible. This includes clinical experience, patient experience and local data/information. This broad definition is an exception to the view commonly held in the medical literature.

The medical sector has developed an evidence pyramid that weights evidence-based on the rigour of experimental design (www.library.downstate.edu/ebmdos/3ebm100.htm). At the top of the pyramid are randomised controlled double blind studies along with systematic reviews or meta-analysis. In the medical sector this level of evidence meets the scientific standard of proof.

NRM is commonly referred to as both 'an art and a science'. It represents a blend of scientific, sociological, cultural and economic disciplines. In a blend of disciplines where evidentiary requirement range from the rigour of the scientific to the non-existent the challenge remains to defining what evidence is and how it should be used. The standard of proof required in NRM will

never need to be high enough as to put an individual to death but ironically should be sufficient so as save a species or a collection of species.

7.2 What is Evidence-Based Practice (EBP)?

Modern technology has enabled the seeking and collection of vast quantities of data of various kinds, but the technology for combining, comparing, linking and interpreting this information to turn it from information to evidence is almost non-existent (www.evidencescience.org/info/index.html). Because of this lack of guidance to turn information into evidence, decisions in fields such as health and NRM need frameworks for objective decision making. Making relevant evidence available to the practitioner is recognised as a problem of moving from experience based to evidence-based practice (EBP) by Pullin and Knight (2001), who suggest that even when there is scientific evidence available there is no framework to ensure that it is used in formulating management plans. They go on to say that 'practitioners can hardly be blamed for carrying out management based on anecdotal evidence if the scientific research to identify the correct management actions has not been done'.

In medicine, Evidence-Based Medicine (EBM) involves the conscientious and judicious use of current best evidence in the health care of individual and populations. It means integrating individual clinical expertise and best available evidence from clinical research. The process is a lifelong one of self-directed learning (Knox 2003).

Craig et al. (2001) defines EBM as integrating clinical experience and patient values with the best available research information and describes four steps as asking answerable questions, accessing the best information, appraising the information and applying the information to patient care.

Although it is clear that there has been a groundswell of support and activity around the evolution and development of evidence-based reporting in the medical and public health field, the gap between the concept and implementation in practice has been clearly recognised (Gerrish and Ashworth 2007; Jennings and Loan 2001; McAlister and Graham 1999; McCluskey 2003; Morrison and Sullivan 1999; Rikard-Bell and Waters 2006).

Working to help the practice of evidence-based education (Morrison and Sullivan 1999) developed an instrument which by the use of the checklist allowed the reader to critically appraise reports of educational interventions and was shown to help in the practice of evidence-based education (Morrison and Sullivan 1999).

The instrument consisted of the following nine questions:

1. Is there a clear question that the study seeks to answer?
2. Is there a clear learning need that the intervention seeks to address?
3. Is there a clear description of the educational context for the intervention?
4. Is the precise nature of the intervention clear?
5. Is the study design able to answer the question posed by the study?
6. Are the methods within the design capable of appropriately measuring the phenomena which the intervention ought to produce?
7. Are the outcomes chosen to evaluate the intervention appropriate?
8. Are there any other explanations of the results explored in the study?
9. Are any unanticipated outcomes explained?

Seeking to find a way to improve decision making regarding intervention impact in the public health and medical fields Glasgow et al. (2006) suggest the RE-AIM framework whereby the evidence base could be enhanced by research studies that evaluate and report multiple indicators of internal and

external validity such as Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) as well as their combined impact.

Pullin and Knight (2003) went further to propose developing a facility for systematic review and dissemination of evidence to serve conservation practice and policy aiming to incorporate a greater use of scientific evidence in decision making within conservation practice. Pullin and Knight have established the 'Centre for Evidence Based Conservation', which aims to produce systematic reviews on the effectiveness of various conservation management interventions (www.cebc.bangor.ac.uk). In this way it is hoped that the overall pool of evidence from which mangers can draw will be increased.

Since Pullin and Knight (2001) first appeared in the literature drawing the parallels between medicine and conservation there has been a groundswell of support and further publication supporting what medicine and public health can offer based on their approach to evidence-based reporting and the translation into evidence-based practice (CEBC 2006; Fazey et al. 2004; Fazey and Salisbury 2002; Sutherland 2003).

7.3 The need for Evidence-Based Practice in conservation and NRM

Every year large amounts of money are being spent on NRM throughout the world. In Australia alone since 1990 approximately A$6.51 billion has been invested by the Australian Government (Hajkowicz 2008). The inability to demonstrate that there is sufficient knowledge of effectiveness, whether management interventions have worked or the impact of investments must surely weaken the case for future investments (Sutherland et al. 2004).

The lack of evidence-based decision making that has lead to poor capacity for learning and improvement is widely recognised (CEBC 2005; CEBC 2006; Fazey et al. 2004; Fazey and Salisbury 2002; Ferraro and Pattanayak 2006; Pullin and Knight 2005; Randerson 2003; Sutherland 2003; Sutherland et al. 2004; Svancara et al. 2005). In one study Fazey et al. (2004) identified that only 12.6% of 547 studies published in three prominent international conservation journals, specifically tested or reviewed interventions. The authors suggest that reasons for conservation managers struggling with the research literature are due to the it's voluminous nature, little coherence and varying quality, journals are often expensive or obscure and reports on environmental impact statements are largely accessible only for those who the work was intended.

Sutherland et al. (2004) also found that the reasons why people generally did not access primary literature to help in decision making was that it was too time consuming to allocate and access, too time consuming to read or too technical or difficult to interpret in the context of their decision making.

There are many problems with using anecdotal or experiential evidence including that: it is difficult to find the source of the information and decisions maybe myth-based (Sutherland et al. 2004), previously accepted beliefs maybe wrong, it is often difficult to learn from experience of others who base their decisions on intuition and experience except through mimicry (Sutherland 2003), each individual only has limited experience of the outcomes of an intervention (Sutherland et al. 2004), and poor decisions may be perpetuated. Pullin and Knight (2001) argue that within the conservation sector 'justification for proposed actions is experience-based rather than evidence-based, action is often taken without monitoring or evaluation of effectiveness, and results are rarely widely disseminated'. Supporting this (Sutherland et al. 2004, p.305) argue that, 'much of current conservation practice is based upon anecdote and myth rather than upon systematic appraisal of evidence', urging for the need for mechanisms that review available information and make recommendations to practitioners.

The use of evidence in decision making enables more objective judgement to be made about success. This is particularly important in evaluation methods that are gaining considerable

momentum in Australian NRM such as performance story reports. Christensen (2003) states, 'it is far easier to measure what you do and call it success than it is to take a hard look at whether you actually made a difference'.

It is widely agreed that there is an urgent need for increased use of evidence and mechanisms that review available information, work towards closing the disconnect between policy and science and make recommendations to practitioners (Fazey et al. 2004; Maindonald 2002; Pullin and Knight 2001; Pullin and Knight 2005; Randerson 2003; Sutherland et al. 2004; Svancara et al. 2005). There is also agreement between many authors (ANAO 2008; Fazey 2004; Salafsky et al. 2004; Sutherland et al. 2004) of the need to for integrating current adaptive management approaches with an evidence-based approach within conservation. Fazey et al. 2004 states that:

> While an evidence-based approach using reviews of the literature asks if there is prior evidence for an intervention, adaptive management aims to learn through the continued reflective process of reviewing management decisions. In this respect it actively acknowledges uncertainty because it tries to learn from it, while an evidence-based approach does not do this directly.

Fazey et al. (2004) concludes that an evidence-based approach could significantly complement an adaptive management approach in conservation. They envisage that the knowledge gained from adaptive management could be widely disseminated, adding to the base of evidence from other sources including more 'controlled trial' type evidence. In this way an evidence-based approach would not exclude valuable knowledge gained through management. Fazey et al. 2004 does note however that an evidence-based approach using literature reviews asks if there is prior evidence for an intervention whereas adaptive management aims to learn through continued reflection and learning through reviewing management decisions.

EBP in NRM is not a method in itself but an approach to be integrated into current practices of M&E, adaptive management or management effectiveness. EBP requires cultural change within individuals and organisations to embrace and accept new standards for planning, implementing, monitoring, reporting and evaluating.

Since 1990 the Australian Government has invested in seven major natural resource programs totalling A$6.51 billion. A review of Landcare and NHT by the ANAO in 1997 (ANAO 1997) concluded amongst other findings that, 'overall, monitoring, review and performance reporting has been variable across programs and falls short of identified better practice'. A similar review was undertaken by the ANAO in 2008 of the Regional Delivery Model for the National Heritage Trust (NHT) and the National Action Plan for Salinity and Water Quality (ANAO 2008). The report, ten years on from the first report, concluded that, 'overall, the ANAO considers the information reported in the Department of Agriculture, Fisheries and Forestry and NHT Annual reports has been insufficient to make an informed judgement as to the progress of the programs towards either outcomes or intermediate outcomes' (p 102). Furthermore, the report goes on to say that a high priority should be given to the development and implementation of a process that will enable progress against outcomes to be reported and lessons learned to be drawn out in future annual reports.

It is acknowledged that the success of programs such as NHT depends on the knowledge and expertise of the regional NRM bodies (ANAO 2008; Campbell 2006). A study by Pullin and Knight (2005) investigated the extent to which scientific evidence is used in decision making by the way conservation organisations in the United Kingdom and Australia formulate their protected area management plans. The study involving 141 responses from seven United Kingdom organisations and 29 from six Australian organisations found that the most frequently used sources of information in descending order were existing management plans, expert opinion from outside the compilation group, published reviews, books or handbooks, and documentation or personal accounts of traditional practices in land management. Least frequently sourced were electronic and web based

information and published popular articles. It could be concluded that overall decision making was generally not evidence-based.

Table 8 provides an illustration of the typical sources of information used by conservation practitioners based on a survey conducted in Broadland, United Kingdom, an internationally significant wetland (Sutherland et al. 2004). Out of 170 knowledge sources drawn on for decision making by managers 77 per cent were anecdotal (common sense, personal experience and asking other managers), and only 2 per cent was based on scientific literature.

Table 8: Sources of information used by conservation practitioners in Broadland, United Kingdom

Source of information	Number of knowledge sources	%
Common sense	55	32.4
Personal experience	37	21.8
Speaking to other managers in the region	34	20.0
Other managers outside the region	4	2.4
Expert advisors	17	10.0
Secondary publications	19	11.1
Primary scientific literature	4	2.4

Source: Sutherland et al. (2004)

7.4 Evidence-Based Practice lessons from the health sector

Conservation has been compared with medicine as a crisis discipline in which action is often required urgently in the absence of good information (Pullin and Knight 2001).

Conservation managers have long been faced with the unenviable task of making decisions in the face of uncertain knowledge. Even where there is well researched, high quality evidence (which is not often), it is often the case that managers do not have access to the information. The most important barriers to increased use of evidence-based reports by practicing clinicians appear to be lack of knowledge and familiarity with the basic skills, rather than scepticism about the concept (McAlister et al. 1999).

In a study of occupational therapists in Australia (McCluskey 2003) surveyed 85 occupational therapists and found that half of the respondents rated their level of knowledge and skills required for evidence-based practice as low (conducting database searches = 50.7 per cent; critically appraising literature = 53.0 per cent). The majority of respondents (79.1 per cent) reported a low level of knowledge about electronic databases. Few respondents had attended education sessions on evidence-based practice (15.0 per cent). The six most commonly reported barriers to adopting evidence-based practice were lack of time, a large caseload, limited searching skills, limited appraisal skills, difficulty accessing journals and a perceived lack of evidence to support occupational therapy intervention.

There is a body of literature that draws on such dilemmas faced by conservation practitioners and compares them with similar issues faced within the medicine sector. Managers in both sectors must make decisions quickly in times of crisis and often with incomplete knowledge about the situation or potential consequences of action (Pullin and Knight 2001). Both professions are often faced with ethical and moral dilemmas in that there is a compromise between the need to do something, and the uncertainty of the outcomes.

Pullin and Knight (2001) appeared first in the literature drawing parallels between medicine and conservation and to present a practical framework to encourage evidence-based conservation action. Two years later Pullin and Knight (2003) conducted the first formal assessment of the extent

to which scientific evidence is used in conservation management. Their findings suggested that scientific information is not being used systematically within conservation because it is not easily accessible to decision makers. Two years later Pullin and Knight (2005) described a comparison of elements of clinical and conservation practice. The comparison considers the subject, organizational culture, research and evidence and decision making. Table 9 lists some of the elements taken from this comparison.

Table 9: Comparison of elements of clinical practice and conservation practice

	Clinical practice	Conservation practice
Subject	Single species, individual and population based with relatively few interactions with other species or fundamental geographical variables.	Genes to ecosystems, complex system of many species with many interactions and geographically variable.
Organisational culture	Highly professional with strong formal body of knowledge. High value placed on scientific knowledge and research with many researchers being practitioners.	Less professionalised with less formal body of knowledge. Personal experience and self-generated knowledge highly valued, intensely pragmatic. Strong divide between researchers and practitioners.
Research and evidence	Strong biomedical, empirical paradigm: focus on experimental methods and quantitative data. Well organized, indexed literature in focussed journals with clear boundaries; amenable to systematic reviews.	Weak natural history paradigm with more use of qualitative methods. Poorly organised and indexed literature spread across academic and popular journals and grey literature with unclear boundaries
Decision making	Decisions often homogenous involving the application of a general body of knowledge to specific circumstances. Long tradition of using decision support systems.	Heterogenous decisions rarely based on applying generalised knowledge to specific circumstances. Little tradition of using decision support systems.

Source: Pullin and Knight (2005)

Fazey et al. (2004) looked at the differences between medicine and conservation management noting additionally differences in types of evidence, samples sizes, outcomes, application of research, funding and resources and the influence of politics as shown in Table 10 below.

Table 10: Differences between medicine and conservation management

	Medicine	Conservation management
Types of evidence	Often experimental and easy to control potential or explanatory variables	Rarely experimental and difficult to control explanatory variables
Sample sizes	Large sample sizes easy to obtain	Hard to obtain large sample sizes
Outcomes	Easy to define and measure	Harder to define and measure
Application of research	Conclusions can have global implications	Conclusions often landscape or problem specific
Funding and resources	Significant resources and funding with strong interest from the private sector	Much less funding with relatively little interest from the private sector
Influence of politics	Generally supportive	Often negative

Source: Fazey et al. (2004)

Maindonald (2002) also made a comparison of factors in evidence-based medicine and environmental science considering factors such as motivation, sources of evidence, assembly of evidence, rating evidence, sources of expert knowledge and weaknesses in methodology. He concludes that the approaches of evidence-based medicine do not carry across directly to environmental science including reasons such as:

- There is no disciplinary speciality whose practitioners are familiar with different sources of evidence as the issues require specialists from a wide range of disciplines.
- There are no standards for weighting evidence such as the medical sector.
- Sources of evidence are enormously varied in environmental science, much of it residing in unpublished reports.
- There is a lack of willingness to disclose failures in environmental science.

Twenty years after the publication of the ground-breaking textbook on evidence-based medicine, *Effectiveness and Efficiency. Random Reflections On Health Services*, by Archie Cochrane in 1972 (Cochrane 1972), the Cochrane Collaboration was established. It is a not-for-profit organisation (www.cochrane.org) that was established as a tool for producing, structuring, and disseminating up-to-date, accurate, evidence-based information on the effects of health care interventions (Editorial 2006). The Cochrane Library includes the Cochrane Central Register of Controlled Trials (CENTRAL), with over 415 000 references to completed and ongoing randomized controlled trials; the Cochrane Methodology Register, with over 5600 references to methodological papers; and three other databases of systematic reviews, health technology assessment reports and economic evaluations (Grimshaw 2004).

Pullin and Knight (2003) have proposed that the following principles on which the Cochrane Collaboration is founded are also directly transferable to conservation-based collaborations:

- developing and maintaining collaborations for good communications and open decision making
- avoiding duplication through good management of information
- minimising bias through independence and scientific rigour
- keeping up to date through incorporation of latest evidence
- promoting access through wide dissemination of outputs and strategic alliances, and
- building on the enthusiasm of individuals by involving and supporting a skills base.

7.5 Criticisms of Cochrane

Although the Cochrane Collaboration has had a huge impact on the public health and medical field, it is not without criticism and challenges. Some of the key criticisms are (Editorial 2006):

- The Cochrane review method must be adapted to the study design.
- There is a need to improve study selection and quality assessments.
- One major obstacle faced by Cochrane reviews is publication bias, in which studies with negative results are rejected for publication.

Following on in this theme (Grimshaw 2004) reports on the following challenges faced by the Cochrane Collaboration:

The distributed-computing model results in interest-driven as opposed to priority driven reviews. There has been some funding to drive priority-driven reviews.

- Only nine per cent of Cochrane reviewers are from low to middle income countries.
- Cochrane reviews are not particularly user friendly.
- Cochrane reviews have not adequately assessed the potential harms of health care interventions.

- Maintaining the enthusiasm of reviewers to update their reviews is an increasing challenge as the number of reviews increase.

The incorporation of evidence from sources other than controlled trials has also been a point of discussion in using an evidence-based approach in the medical sector. Kirkwood (2004) points out that there is increasing recognition in the medical sector of the need for evidence from a combination of sources. Kirkwood (2004) suggests in particular that controlled trials are an inadequate source of evidence in the following instances:

- The intervention is already well established or its delivery is by nature widespread—for example, the current advertisement campaign in the United Kingdom to encourage adherence to speed limits in built up areas.
- No control groups exist; the evaluations need to be based on comparisons before and after the intervention and on comparisons of adopters with non-adopters.
- The intervention has been shown to be efficacious or effective in small scale studies, conducted under ideal conditions, but its effectiveness needs to be shown when scaled up and carried out under routine conditions.
- The intervention is multifaceted and the pathways to impact are complex.
- Ethical issues in the use of a control group, such as occurs when the intervention has known benefits but its efficacy against an important outcome is not known, or when patient choice needs to be factored in (Stephenson and Imrie 1998).

A number of these points will resonate with conservation managers. Particularly relevant is the fourth point – that the relationship between intervention and impact is complex and difficult to ascertain. Clearly it is critical as the conservation sector moves into a more evidence-based approach that different types of evidence are included in the equation.

7.6 How is evidence-based practice being used in NRM

There are fewer solutions to EBP in NRM reported in the literature than there are calls for the need. Amongst the proposed approaches, Sutherland et al. (2004) suggest that collating individual experiences into a substantial database could combine experiences to form a body of evidence that could be accessed by individuals who have experienced similar problems. Sutherland (2004) and Pullin and Knight (2001) advocate the use of meta-analysis as the most effective tool while others note the need for well designed evaluations in the NRM field (Lowe et al. 2008; Rycroft-Malone et al. 2004; Salafsky et al. 2004). Ferraro and Pattanayak (2006) talks about the need for evidence to support the counterfactual in conservation and the complete absence of literature on the rigorous measurement of the counterfactual in the conservation literature.

Currently there are five organisations throughout the world that are promoting and engaging in EBP including the Campbell Collaboration, Cochrane Collaboration and the US Environmental Protection Agency. There are currently only two web sites promoting EBP in conservation and environmental management, these being Conservation Evidence.com and Conserve Online.

Conservation Evidence.com was designed by William Sutherland from the University of Cambridge and has a guiding Advisory Board. The site aims to provide up to date information to practitioners and includes systematic reviews undertaken by CEBC.

ConserveOnline is a ‘one-stop’ online, public library, created and maintained by TNC in partnership with other conservation organisations. The library makes conservation tools, techniques, and experience available to a broad community of conservation practitioners. This site is intended to foster learning and collaboration, and provide information and support to anyone making conservation-related decisions, from the staff of conservation organisations to land managers at government agencies to local land trusts to private landowners. Through discussion groups and

information sharing, ConserveOnline is an open forum for sharing successes and failures, and for connecting scientific research with field-based conservation practice.

Fazey et al (2004) identify several conservation organisations and programmes that aim to achieve similar outcomes or are based on similar principles to the Cochrane Collaboration including the United Kingdom's National Biodiversity Network (NBN), Australian Virtual Herbarium, Global Biodiversity Information Facility (GBIF) and the IUCN. All of these organisations provide assistance, guides, support or coordination for conservation practitioners.

A review of literature on evidence-based approaches in NRM would not be complete without reference to the CEBC systematic reviews. The CEBC was established in 2003 with the goal of supporting decision making in conservation and environmental management through the production and dissemination of systematic reviews on the effectiveness of management and policy interventions. The CEBC acts as both a source of evidence and co-ordinator of a fast-growing collaborative network undertaking systematic reviews (www.cebc.bangor.ac.uk/).

Systematic review is a method for summarising, appraising and communicating results and implications of a large quantity of research and information. It aims to exhaustively search and obtain all relevant unpublished grey literature and research findings including peer-reviewed journal publications. The approach is more robust than traditional literature reviews which may be purely narrative, subjective or susceptible to publication bias (CEBC 2006).

The general approach taken from the CEBC 2008 *Guidelines for Systematic review in Conservation and Environmental Management* is:

1.0 Planning the Review

- Question formulation
- Review scoping
- Developing a review protocol
- Developing a search strategy

2.0 Conducting the review

- Searching for data
- Searching online databases and catalogues
- Searching organisations and professional networks
- Web searching
- Selection of relevant data
- Assessing quality of methodology
- Data extraction
- Data synthesis
- The interpretation of meta-analysis and systematic review evidence
- Evidence of effectiveness
- Applicability of results

3.0 Reporting and dissemination of results

Systematic review is useful for synthesising results from a wide range of separate studies examining the same question using meta-analysis to integrate and summarise the results. A summary estimate is developed for an effect of an intervention. The development of systematic reviews and the research undertaken by the CEBC has seen the development of several other supporting tools for EBP in NRM including a standard terminology for systematic review (www.cebc.bangor.ac.uk/), a preliminary hierarchy of quality of evidence (CEBC 2005) and an attempt to define the elements of a reviewable question (CEBC 2006).

There is currently no coordinated effort within Australian NRM for the definition, adoption or implementation of evidence-based practice. There have been attempts in the past to bring NRM researchers and practitioners together to discuss the need and issues surrounding evidence-based practice (Fazey and Salisbury 2002) but have concluded with uncertainty as to the way forward.

8. Conclusions and recommended areas for further development

This review has identified a significant amount of relevant research and development activity within the scope of the Increment project. Performance reporting is receiving increasing amounts of attention in the not-for-profit sector, particularly around financial transparency.

Performance reporting within the conservation field is also receiving increasing attention, with growing commentary about the inadequacy of evidence linking activity to conservation outcomes. The theory and processes around management effectiveness are assisting to fill this need however there appears to be a long way to go. The provision of balanced performance reporting by conservation organisations still seems rare, yet some international leaders such as TNC have been putting increasing resources into reporting over the past decade.

The literature around reporting to conservation investors is extremely limited, supporting the need for the Increment project. Even the broader domain of donor to charity is far from being adequately serviced by research regarding effective performance reporting.

In summary, the following concepts and processes from this literature appear to have particular utility for application in the Increment project:

1. The concept of 'balanced reporting' that has been introduced through concepts such as the balanced scorecard.
2. The identification in the literature that balanced reporting for conservation organisations includes assessment of 'capacity' (i.e. foundational activities) that are required to deliver the 'outputs' that are required to deliver the 'outcomes'. This is sometimes referred to as procedural and consequential reporting in the literature.
3. The use of results chains or program logic to structure reporting where there are complex linkages between outputs and outcomes.
4. The linkages between planning and evaluation and reporting that are emphasised in the management effectiveness literature.
5. The identification of some suggested financial performance indicators for non-profit organisations and 'areas for attention' in the area of governance.
6. The importance of evidence based practice to ensuring that the reporting is credible for both external and internal audiences.

The following areas are felt not to have sufficient research and therefore may be candidates for further development in the Increment project:

1. A performance reporting framework development process that synthesises the above areas of research into a concise adoption process.
2. Processes to guide the incorporation of business unit structures into organisation level logic structures.
3. Instructions written in conservation language to assist the development of management effectiveness performance indicators.
4. The use of analytical techniques such as Return on Investment to calculate performance.
5. The further application of evidence based practices to improve the credibility of reporting, particularly methods to evaluate the quality of individual pieces of evidence and 'pools' of evidence.

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EXECUTIVE SUMMARY OF RECOMMENDATIONS

This report provides a statement of scope of a Reporting Tool for Australian Bush Heritage Fund for reporting on biodiversity conservation outcomes. This scope has been defined by analysis of existing reporting frameworks and approaches used in the donor-based conservation sector and analysis of potential end-user needs. It does not provide a detailed solution for the implementation of the Reporting Tool but does provide the basis for such a solution to be developed. This section summarises recommendations from the entire scoping process and synthesises next steps in the development and implementation of the Reporting Tool.

RECOMMENDED REPORTING FRAMEWORK

The report provides a review of reporting frameworks and approaches currently used by the donor-based conservation sector. From this review it is apparent that the industry-standard for reporting the successes and failures of donor-based NGOs involves limited communication of quantitative, outcomes-based information. Even where detailed outcomes monitoring and evaluation systems are being used, the reporting style is kept simple and in the form of narrative or a series of dot points. As was shown through the stakeholder needs analysis, more needs to be done to tailor the communication of outcomes to the information needs of stakeholders.

For monitoring and evaluation we recommend the use of an outcomes based reporting framework identified in the review, used by the World Commission on Protected Areas (WCPA) for Assessing Management Effectiveness of Protected Areas (referred to as the WCPA framework). The elements of this framework are described in Table 1. This framework is the only one that allows the implementation of all of the recommendations provided below. It is flexible enough to allow the staggered implementation of a comprehensive monitoring and evaluation system, and also allows organisational and site-specific methodologies to be developed within the generic approach. It has been successfully used by international conservation organisations, and hence the standard approach can be used to facilitate comparison and learning between organisations

Table 1: WCPA Framework for assessing management effectiveness of protected areas and protected areas systems

Element of evaluation	Explanation	Assessed criteria	Focus of evaluation
1. Context: Where are we now?	Assessment of importance, threats, and policy environment	Significance, threats, vulnerability, national context	Status
2. Planning: Where do we want to be?	Assessment of protected area design and planning	Protected area legislation and policy, PA system design, reserve design, management planning	Appropriateness
3. Input: What do we need?	Assessment of resources needed to carry out management	Resourcing of agency, resourcing of site, partners	Resources
4. Process: How do we go about it?	Assessment of the way management is conducted	Suitability of management processes	Efficiency and appropriateness
5. Output: What were the results?	Assessment of the implementation of management programs and actions, delivery of products, and services	Results of management actions, services, and products	Effectiveness
6. Outcome: What did we achieve?	Assessment of the outcomes and the extent to which they achieved objectives	Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

Furthermore recommendations on the reporting and related goal setting process can be made. These are:

1 Goals and objectives should be set at the program level and at the property level. The objectives should be SMART (Specific, Measurable, Achievable, Realistic, and Time-specific) and based on outcomes rather than actions.

2 Targets should be utilised for each objective, as a means of quantifying success. These targets should be formulated on baseline data to ensure they are realistic and achievable. For ABH, targets need to be set for each of the program objectives

3 Goals, objectives, and targets should be made clear to all stakeholders to reduce confusion and misconceptions about the organisation's aims and expectations. In particular program objectives and property level objectives should be incorporated in reporting and in other communications with stakeholders.

4 The monitoring and evaluation system should use the Pressure-State-Response (PSR) conceptual model as the basis for strong program logic. This can then be further refined using the generic results chain with the addition of context as specified in the WCPA Framework (context-inputs-actions-outputs-outcomes), in which the causal links between components are made clear. While the PSR model is likely to be implicitly used by Bush Heritage reserve managers, ecologists and management planners (i.e. management actions are a response to problems at each property), it would be beneficial to explicitly document the causal links between the pressure, responses to the pressure, and the resulting state of the biodiversity component. This can be done broadly with the PSR model, or in more detail using the results chain.

5 The immediate evaluation focus should be on the outcome component in order to demonstrate the impacts of strategic management actions. As such, monitoring will involve the collection of biological data as the principal data type corresponding to outcome evaluation for biodiversity conservation.

6 To demonstrate causality (of management actions on outcomes), all management actions should be documented and used as explanatory variables in the evaluation of outcomes. (Note that this does not involve the evaluation of actions/outputs, merely

their quantification.) While management actions are currently being documented by reserve managers, a central system for documenting actions which allows whole-of-organisation access would be useful, and should be further investigated.

7 To obtain the full benefits of a monitoring and evaluation system, evaluations should include evaluation of indirect (output) measures of success in order to provide success contextualisation and to better inform adaptive management. This will necessitate the collection of social and economic data types in addition to biological data. Bush Heritage will need to increase documentation of the context, planning, and inputs, and ensure that documentation of actions/processes and outputs are continued. The elements that need to be documented within these components is detailed within the WCPA framework, and can be applied to Bush Heritage's specific situation in a collaborative workshop situation with Bush Heritage staff, reserve managers, ecologists and external specialists. These components will then have the necessary data available in order to be evaluated at some point in the near future when the necessary funding, knowledge and time are available.

8 Monitoring should begin before any management actions commence and continue after the actions have finished. In terms of land acquisition as a management action, monitoring may not be possible until the land has been purchased, in which case monitoring should begin as soon as possible after land acquisition. Monitoring should continue into the future so that lag-time responses are captured.

9 The spatial extent of monitoring should include the full zone of impact of the management actions at the property level. In terms of organisational levels, the reporting system should allow the calculation and evaluation of overall program/organisational success relative to program level objectives, presumably as the cumulative total of the outcomes of each constituent property. The full zone of impact of the management actions at the property level are adequately encompassed within the Bush Heritage Outcomes Monitoring program. The data collected from this program are not currently being used to assess achievement at the national/organisational scale, so the opportunity exists for statistically aggregating property level data up to the national scale, or alternatively for putting in place new measures of outcome success at this level.

10 Evaluation of success should be of outcomes relative to property and program objectives and targets. As targets are not being used to their full potential by Bush Heritage at this time, success is currently being evaluated as outcomes relative to objectives. This is an appropriate interim method, however targets as discussed previously are a useful tool and their use would be of benefit to the organisation.

11 External audits are beneficial in increasing stakeholder trust and confidence in the results of evaluation, as well as providing useful information for adaptive management, and should be incorporated as a periodic element of the evaluation system. Due to funding restraints, external audits should be conducted approximately once every 5-10 years. The evaluations are currently being conducted by Bush Heritage ecologists, and the data collection is aided by Reserve Managers. Once the monitoring and evaluation system is in place, external audits of the performance of the organisation should be taken up.

CONCEPTUAL APPROACH TO REPORTING

It is recommended that the outcomes based reporting (WCPA) framework proposed above is implemented using a staircase model as shown in Figure 1.

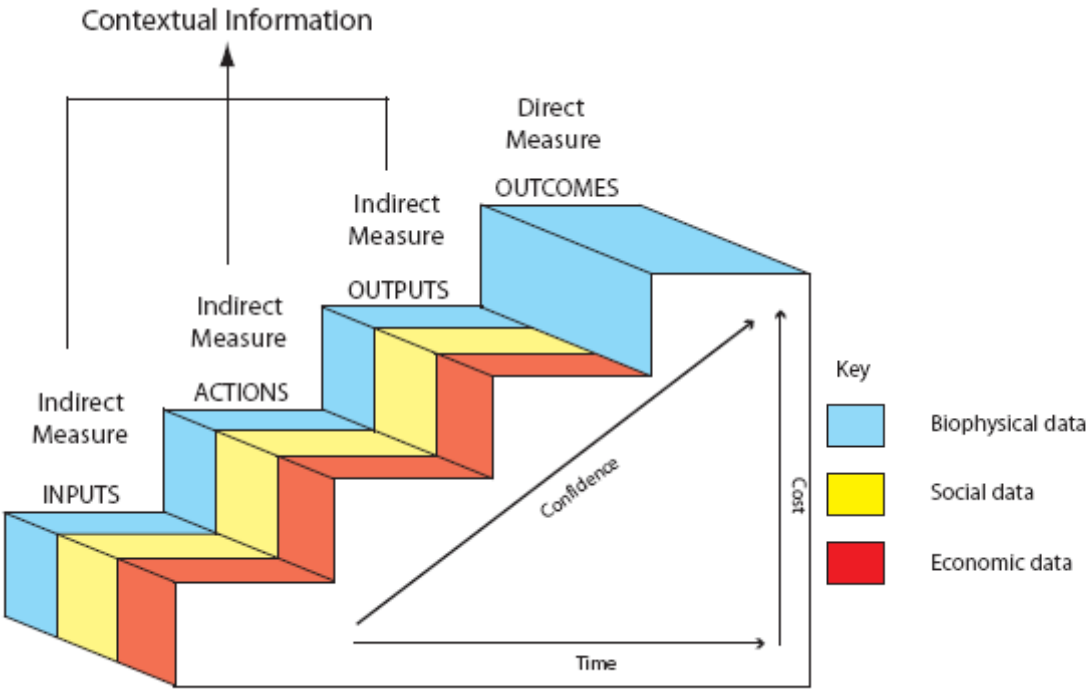

Figure 1: The Staircase Reporting Model showing how inputs, actions and outputs data can be used in outcomes reporting

The information hierarchy is essentially a representation of the process of data transformation. It begins with all the raw data collected from a monitoring and evaluation programme and progresses through to presenting an account or narrative of what the data means in simple terms. The hierarchy identifies four levels of information:

Level 1. Raw data

Level 2. Results of analysis

Level 3. Modelled or ranked results

Level 4. Story or narrative

These levels are shown in Figure 2. It should be noted that the boundaries between each level are not fixed/closed/solid, and that the levels have been chosen as a means of simplifying what is in reality almost a continuum of data transformation and refinement/extraction.

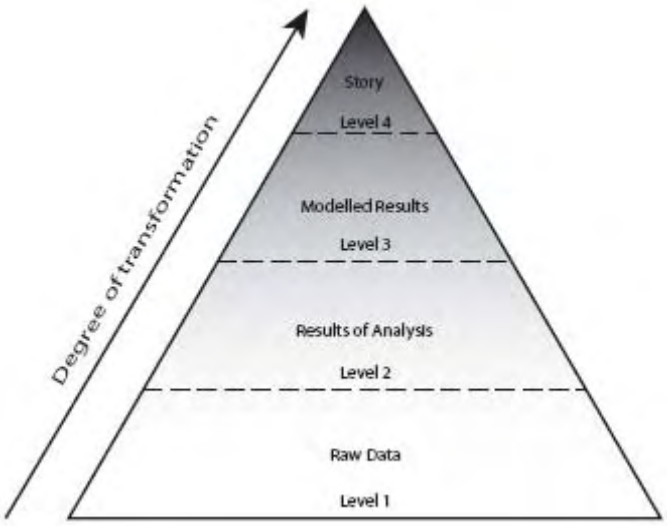

Figure 2: The "Information Hierarchy" sub-model

This hierarchy of information would allow users of the Reporting Tool to access information initially at the top or Story Level. This level requires a high degree of inference or interpretation of information. Users could then successively access greater and greater detail as required (and as allowed) down to some users being able to access raw data (Level 1) used to develop statements on the achievement of outcomes.

STAKEHOLDER NEEDS AND LESSONS FOR ABH

Stakeholders for the Reporting Tool were grouped into two categories: financial investors, being those who donate to ABH; and, information beneficiaries, who would be users of information about ABH outcomes or the Reporting Tool approach but do not currently donate to ABH. There were three 'classes' of financial investors identified for the Bush Heritage organisation: Government organisations – those who are directly or indirectly responsible for the allocation of government funding to Bush Heritage projects; Philanthropic investors; and, Small investors.

There were also three 'classes' of information beneficiaries identified for the Bush Heritage organisation: Conservation or environmental non-government organisations (NGOs); Catchment Management Authorities (CMAs) or Regions (terminology depending upon the state in which they exist) and natural resource management (NRM) policy makers; and, Internal (Bush Heritage) staff – such as Reserve Managers and the Bush Heritage ecology team.

The needs of these stakeholders in relation to a Reporting Tool were identified using a combination of focus workshops and interviews with the method chosen depending on the characteristics of the group being analysed. In addition to the intended used of this information, to allow the required scope of the reporting tool to be determined, this needs analysis allowed for several recommendations to be made with regard to general reporting processes within ABH. These recommendations are able to be implemented regardless of the

development of any reporting tool and relate primarily to the way in which information on ABH activities is currently communicated to and understood by stakeholders.

The recommendations are:

1. The overall goal of Bush Heritage and definition of the term 'biodiversity' are not understood by all stakeholders. These should be made clear on both the ABH website and also in each outcome report.
2. Specific organisational objectives need to be defined and agreed upon at all levels (i.e. national, bioregional, property, and project objectives) by Bush Heritage staff. These then need to be made explicit and clearly communicated via all communication media (e.g. website, annual report, outcomes report).
3. Reporting should occur principally at the property and national spatial scale, and if possible and appropriate, at the project and bioregional scale. The particular method for reporting at the property and national scale need not be the same: at the property scale the focus should be on reserve-specific objectives and trends, while at the national scale stakeholders were generally more interested in a broad overview of the contribution or success of the organisation as a whole.
4. Reporting should be focused on long-term trends, the scale of which is determined by the particular indicator. In the initial period of acquisition and management of a reserve during which time there is little data or trends to report, simple outputs such as lists of species richness and abundance would be of interest to many stakeholders. Predictions of future trends in environmental variables would not engender increased confidence, and for this reason should not generally be included in outcome reporting.
5. Environmental and ecological outcomes should make up the greater part of the information content in the outcome reports. A small amount of social information should be included, as well as some measure of the relationship between financial investment and the outcomes. Other information regarding outcome monitoring, evaluation, and reporting should also be available as part of the information hierarchy. Staff credentials could be placed on the Bush Heritage website rather than within the outcome reports, as while this was strongly desired by philanthropic investors, it was not requested by other stakeholders.
6. Initial reporting should be aimed at providing a quantitative storyline. The scientific data-based element of modelled results should be incorporated in the story. Modelling elements should focus on simplified index trends or scorecards.
7. More detailed underlying data, such as modelled results, results of analysis and raw data should also be available to stakeholders in their entirety. Given the popularity of this level among stakeholders, it would be worthwhile including explanations of the modelling results to ensure they are understandable to the majority of stakeholders. Raw data and results of analysis were not as commonly requested, and as such may only be available to those who specifically request it. Given that those interested in it are most likely to be those with a scientific background these levels need not be modified or annotated to the extent of the more interpretative levels of information.
8. Preferred presentation styles of outcome information tend to be highly personal, and as such the best method for coping with the many different presentation format requests would be to use a combination of styles. This combination would need to

balance the relative amounts of each presentation type (i.e. text, graphs, charts, photographs etc). Graphs need to be kept as simple as possible, perhaps through the use of indices or scorecard type approaches. Photos need to be useful, and add to and substantiate the story being told, rather than just being a great picture. The structure of text should be chronological (e.g. problem-action-outcome), but for those stakeholders who would have preferred the outcomes first, this can be circumvented by having the outcome described in the title. For example, "Improved Water Quality at Natural Springs on Carnarvon Station Reserve". All elements of the reporting presentation should be kept as simple as possible to facilitate ease of understanding and comprehension.

VISION AND SCOPE OF THE REPORTING TOOL

The needs analysis of stakeholders and conceptual reporting approach have been used to develop a scope and vision for the reporting tool. It is recommended that before efforts are made to implement this scope and vision through a detailed design solution, that ABH consider the objectives and priority uses defined in the report. These need to be signed off or amended by ABH staff before any design solution is developed. The objectives identified for the tool are summarised in Table 2.

Table 2: Objectives of the Reporting Tool

Objectives	Not objectives
Primary To develop a reporting framework and related tool to increase the confidence of donors in ABH activities Secondary • To develop a tool for reporting outcomes of biodiversity conservation activities which is able to be used by a broad range of end users including ABH, other conservation groups and Australian Government organizations; • To aid in refining objectives and goals and measuring the achievement of these through outcomes.	• To allow management of ABH properties; • To enable the selection of properties to be purchased; • To enable project management or planning activities

To meet these objectives it is proposed that the Reporting Tool be based on three primary components: data input; analysis tools; and an inference map.

Data input would require an interface with property managers and the ABH ecology team to allow raw data on actions, outputs and outcomes to be input into the system. The report also raises the question of other users of this component; for instance, who would input background data into the reporting system while a property is in the process of being acquired? This question needs to be resolved before a design solution is developed.

The analysis tools would also require an interface which allowed users to manipulate raw data for reporting purposes. At present this user has not been identified although it seems likely that the ABH ecology team could play a role here.

Finally the Inference component provides modelled results and the story described in Figure 3. This component will require multiple interfaces to allow for the differing needs of end users identified in the report. These interfaces do not need to be technical software solutions. They could consist of manual procedures and updating of existing paper or web based reports. The design solution in all cases will be confined by the resources available for its implementation.

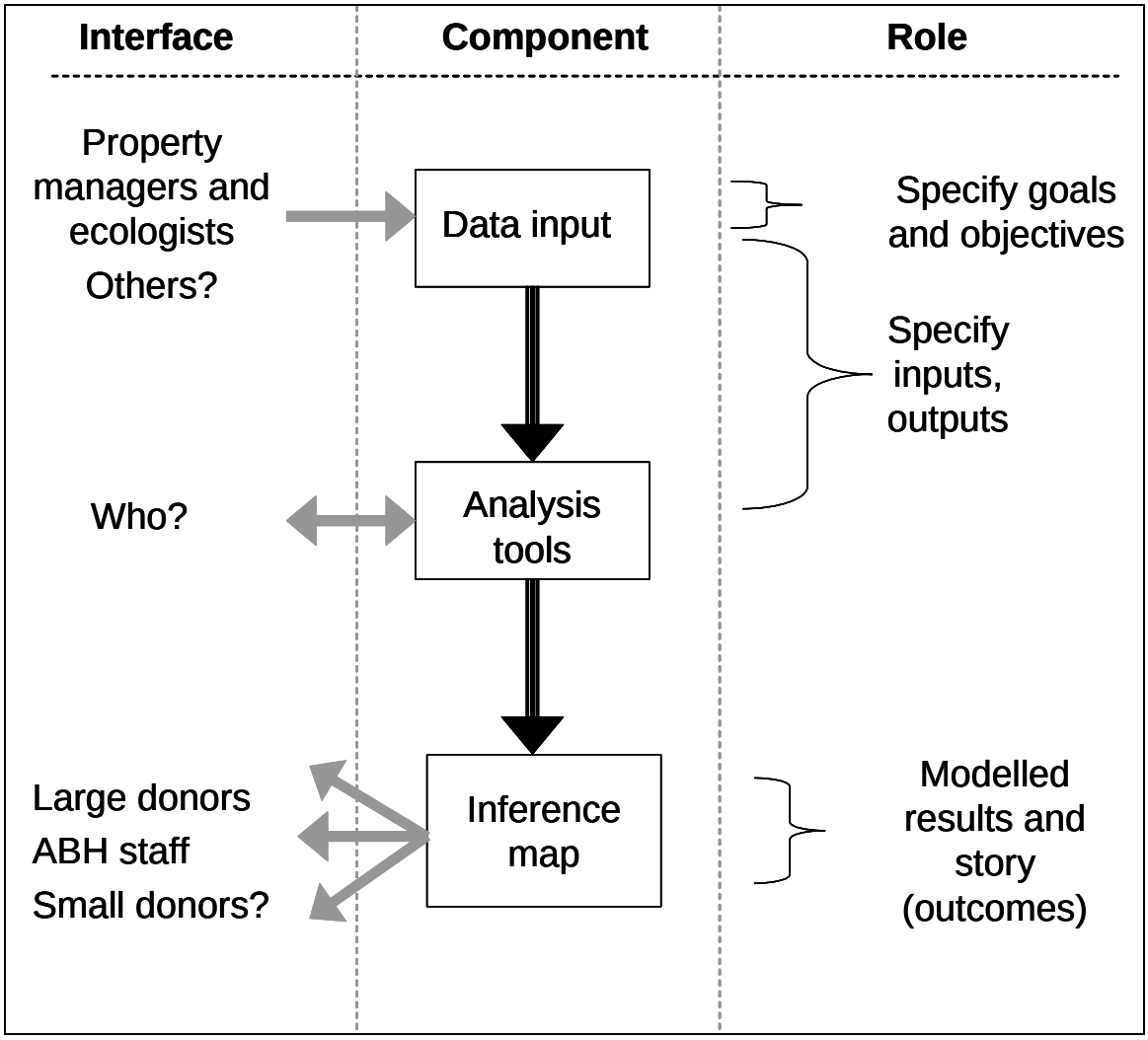

Figure 3: Conceptual design of the reporting tool

It is recommended that before attempting to develop a design solution for the scope and vision outlined in the report that ABH need to consider carefully the following questions in addition to confirming or amending the stated objectives of the tool so that they are in a position to confirm the scope and vision outlined is appropriate to their needs.

1. Who else, other than property managers and ecologists, needs to interface with the data input component of the reporting tool?
2. Who within ABH would be expected or required to interface with the data analysis tool component of the reporting tool? For example who will undertake statistical analysis

of data that has been input into the tool and enable this to be used to assess outputs with the inference tool? Who will be able to do this? Who (if anyone) will be required to do this (eg. to ensure basic analysis required for reporting is undertaken)?

3. Will large donors be able to access information from the analysis tools and data input components or only from the inference map? How (if at all) will their access to results from the inference map be limited?
4. Who will be allowed high level, dynamic access to the results of the inference map? Who else will be able to view results from the inference map? How will this access be limited?

NEXT STEPS

In order for the reporting tool scoped here to be developed a detailed design solution must first be developed. However this should not be developed until ABH have had a chance to approve the design scope outlined in this document. Key steps in implementing design of the reporting tool are:

1. ABH must review, revise and approve the design scope document to ensure that the scope and vision identified is in line with their requirements. Questions of ownership and responsibility within ABH must be addressed as part of this process including those outlined in the previous section.
2. Using the scope and visions document invite relevant IT design organisations to tender for the task of designing a solution within the budget of ABH which best meets the needs identified here.
3. Choose an IT design organization to undertake design and development. This may be in-house IT providers.
4. Develop a detailed design solution (design specification) with the IT design organization.
5. Implement, test and refine the detailed design solution.

Table of Contents

Table of Tables

Table of Figures

PREFACE

Susan Cuddy, Rebecca Letcher, Brendan Mackey and Eleanor Sobey

ABH MEASURING AND REPORTING NEEDS

The Australian Bush Heritage Fund (ABHF) has received funding from the Australian Government to develop an approach to monitoring, evaluating, and reporting on conservation success in terms of achieving 'outcomes', with ABHF being used as a case study. The project is called "InCReMent" (Investment in Conservation and Resource Management). The aim is to develop an approach that will provide greater accountability by reporting information on conservation outcomes resulting from strategic activities supported by investment in the private nature conservation sector. ABHF reserves will be used as pilots to test the reporting approach and development of an associated set of tools. One of the main aims of InCReMent is to increase confidence in the private conservation sector by providing donors with information relating to conservation outcomes that have been achieved as a result of investment in on-reserve management activities. The approach also aims to develop a sound 'program logic' that can be used to supplement biological-ecological data in reporting on conservation success in achieving conservation outcomes.

This review is part of Phase 1 (Project Context and Design) of the Increment project, and focussed on gathering existing information pertinent to the objectives through a review of published theory and practice. This report also examined how InCReMent will integrate with existing ABHF core programs and directions.

PROJECT BRIEF

In August 2006, The Australian National University (through its agent ANU Enterprise) entered into a contract with Australian Bush Heritage Fund to work together on core elements of the InCReMent project, in particular the development of a framework for reporting biodiversity outcomes and the conceptualisation of a related reporting tool.

Key Deliverables and Outputs

No	Deliverable/Output
1	Conduct a literature review of the possible approaches taken to developing reporting tools that aim to link investment to outcomes in the conservation sector. The review will examine the success and failures of reporting tools previously used using case studies such as Earth Sanctuaries Ltd and the Jane Goodall Foundation.

No	Deliverable/Output
	The literature review will also document successful examples of "telling the story" including the purpose of the story, who it was pitched at, how it was presented, what data supported the story, and its perceived impact.
2	Identification of the needs, audience and custodians for the reporting tool by working with ABHF marketing team to develop donor survey and results analysis. Provide recommendation on the nature of the reporting tool after survey result analysis.
3	Delivery of a reporting tool design brief
4	Presentation of reporting tool design brief and recommendations for future direction of project including costing and feasibility for implementation of the reporting tool given desired specifications

This report is the primary product, and contains key deliverables 1), 2) and 3). It is not possible to proceed to designing and costing possible solutions until the client has considered the recommendations for the reporting framework and reporting tool, and consequent implementation issues. The presentation to the client is scheduled for 7 March 2007.

REPORT FORMAT AND AUDIENCE

This report has six parts

- Executive Summary of Key Recommendations
- Preface
- Chapter 1 - Literature review of reporting frameworks
- Chapter 2 - Conceptual framework
- Chapter 3 - Stakeholder analysis
- Chapter 4 - Design of reporting tool.

The audience for the report is ABH management and the InCReMent team.

ACKNOWLEDGEMENTS

Stuart Cowell of ABHF was the project leader, with Rob Richards acting as project manager. Together with ABHF marketing staff, they assisted ANU staff in the information stakeholder interviews. We thank them for their contribution.

ANU Enterprise acted as the agent for ANU in contract negotiations and we thank Simon Cann-Evans for his assistance. Prof Brendan Mackey was the ANU project leader.

CHAPTER 1

REPORTING ON CONSERVATION SUCCESS: A REVIEW OF APPROACHES, FRAMEWORKS AND TOOLS

Eleanor Sobey and Brendan Mackey

This chapter has three sections. Section 1 provides an introduction to the review. Section 2 discusses the issues associated with measuring and evaluating conservation success. These issues are reviewed with respect to approaches, frameworks, and tools used by programs within the conservation sector both nationally and internationally. Several approaches, chosen for their applicability to the Increment Project and the Bush Heritage case study, are discussed in greater detail. Section 2 concludes with recommendations for implementing an approach to assessing conservation success. Section 3 delves into methods for communicating the results of the conservation success evaluation to relevant stakeholders in an effective manner, illustrated by examples from donor-based non-profit conservation organisations. Conclusions drawn from this are presented, and directions for further research highlighted.

In this review definitions are provided for key terms, and a glossary of definitions is provided at the end of the report. In general, the most commonly used meaning of each word is adopted. Given this, to begin we note that the phrase 'conservation success' is used here interchangeably with 'conservation return' and 'management effectiveness'. To further improve clarity and understanding a list of commonly used acronyms is included at the end of of the report.

INTRODUCTION

There is an increasing need for public and private conservation programs to account for the expenditure of funds (Kleiman *et al.* 2000; Stem *et al.* 2005; Tucker 2005). This reflects, among other things, competition between programs for limited funding, and to a growing awareness and demand by investors for evidence that the funding has been spent effectively. Accounting for funding expenditure requires measuring and evaluating the performance of a program relative to its stated purpose. This information in turn must be disseminated to relevant stakeholders. A growing consensus is emerging that the

environmental movement needs something akin to the generally accepted accounting principles that govern financial reporting (Christensen 2002).

The need for increased accountability has been recognized by both government and non-government organisations within the conservation sector. As a result, different approaches have been developed and implemented with varying degrees of success. Measuring and evaluating conservation success is a difficult and complex task, due to the inherent complexity of the scientific concepts that underpin conservation management; in particular, the concept of 'biodiversity' is multi-faceted, and multi-scaled. Furthermore, there are difficulties associated with designing an approach that is logical, credible, cost effective, and practical. There are many issues associated with measuring conservation success, centring on the classical questions "what, why, how, where, when, and who".

Why: Why carry out an assessment? (The purpose of the assessment, linkages between what is measured and objectives)

What: What is success? (How biodiversity is defined and which components are targeted by the organisation.) And consequently:
What is measured to quantify success? (Use of indicators, direct and indirect measures)

When: When should assessments be conducted? (Temporal extent - one-off or ongoing assessment)

Where: Where should assessments be conducted? (Geographic extent and scale)

Who: Who conducts the evaluation? (Internal versus external evaluations, stakeholder inclusiveness)
Who is the evaluation conducted for? (Identification of end-users)

How: How should the assessment be conducted? (The process or approach used, and its constituent frameworks and tools)

Before developing and implementing a reporting system, it is necessary to first understand the key issues and their role in measuring conservation success. A useful starting point is to consider the methods used by other cognate organisations and how they deal with these issues.

One factor that became apparent during the review was the lack of clarity surrounding the meanings of different terms and phrases. Inconsistencies in the language surrounding conservation assessment have impeded the ability of organisations to understand the issues associated, the approaches used, and to communicate about them in an effective manner (Stem et al., 2005

Scope of Review

This review is part of Phase 1 (Project Context and Design) of the Increment project, and focussed on gathering existing information pertinent to the objectives through a review of published theory and practice. This report also examined how Increment will integrate with existing ABHF core programs and directions.

The review has focussed on the ABHF's requirements as a case study, and considered national and international programs, private programs (e.g. non-profit donor-based organisations, corporations, community groups) as well as public (government) programs.

The review was limited to programs within the conservation sector. However a number of aspects relating to conservation success reporting have origins and concurrent use in other disciplines, and these were discussed, albeit briefly.

Profile of Case Study Organisation

The ABHF is a national, non-profit, donor-based organisation established in 1990 with the principal goal of nature conservation. As the case study for the Increment Project, we began this review by considering its characteristics and capabilities.

Goals, objectives and targets

The ABHF's primary organisational goal is to "preserve Australia's biodiversity by protecting the bush" (ABHF 2006) through the following biodiversity conservation objectives:

- maintaining functionally integrated communities and
- the essential ecological processes they mediate;
- increasing population viability through maintaining high carrying capacity habitat of priority species;
- controlling the influence of other interacting species (including pests) on the actual carrying capacity achieved (Gilmore et al. 2006).

Methodology

The general methodology ABHF uses to accomplish their goal and objectives is acquisition (by purchase, gift, and bequest) of land and water of outstanding ecological significance, and through the long-term protection and enhancement of the natural value of this land. The target ABHF aim to reach is to own, or contribute to others conservation management of 1% of Australia (approximately 7 700 000 hectares of land) by 2025.

Achievements

To date, the ABHF owns approximately 23 properties, covering 606 000 hectares of land. The properties are scattered throughout all states except for the Northern Territory and the Australian Capital Territory1. These properties support over 154 vegetation communities, of which 63 are threatened. More than 158 species of threatened plants and animals have also been detected on these properties (ABHF 2006).

Benefactor base and economic turnover

Land acquisition and management is funded by donations from individuals, government bodies (such as Department of Environment and Heritage (DEH), and Land and Water Australia), private philanthropy, and philanthropic organisations. In terms of the donations provided by each 'type' of benefactor, in the 2004/05 financial year 90% was from 'continuing community donations', 5% from government grants, 5% from 'large gifts for specific projects'. Since the 2000/01 financial year, the continuing community donations has provided approximately 50% or greater of the donations, while the government grants and the

[1] For a map of ABHF properties see: http://www1.bushheritage.asn.au/default.aspx?MenuID=69

large gifts for specific projects varied considerably. As such, the community donations (which stakeholder group(s) does this align with?) would appear to be the most stable and dominant source of income. Income from donations ranges from approximately $2 million to $6.5 million per financial year (based on figures from 2000/01 to 2004/05), with a generally increasing trend.

Comparison of Bush Heritage to other conservation organisations

It is useful to compare ABHF with a selection of conservation-focused and donor-based organisations: World Wildlife Fund Australia; Earth Sanctuaries Limited; Jane Goodall Institute; The Nature Conservancy; The Australian Conservation Foundation; Conservation International; and The Nature Foundation South Australia. The results of this comparison are presented in Table 1. This comparison is of particular value for the Communication Success section of the review in which the communication strategies of these organisations are analysed in detail.

Table 1: Characteristics of eight conservation NGOs

Organisation	Year Est'd	Location	Benefactor Base	Geographic Extent	$Turnover	Methods	Goals	Targets
Australian Bush Heritage Fund	1990	Australia	No numbers given. Income from donations ~A$4.2m 2004/05. 90% of this from 'continuing community donations', 5% from government grants, 5% from 'large gifts for specific projects' (Annual Report 04/05).	National; currently own 606 000ha (23 properties throughout Australia	2004/05 income was ~A$4.8m (of which ~A$4.2 m from donors); expenditure ~A$5.1m,	Long-term protection and enhancement (ie management) of the natural value of land acquistions of outstanding ecological significance (in a cost effective way - Sandy's report pg 2) (What We Do page)	To "preserve Australia's biodiversity"	To own, or contribute to others' conservation management of, 7 700 000ha land, or 1% of Australia by 2025.
WWF Australia	1978	Australia and Oceania	>80,000 donors. In terms of money invested, more than half comes from individual supporters (56%), followed by (in decreasing order): government grants (21%), WWF network (7%), corporations (5%), legacies (4%), and trusts and foundations (3%). (Annual Report 2005)	National	Expenditure: $16.5m, Income: $17m	Works with industries and the corporate sector to achieve long term sustainable change by "using scientific research and the best available solutions to address the nation's greatest environmental threats" (Annual report 2005). More of a top-level organisation, in that it is concerned with changing and implementing policy based on science, funding projects set up by individuals and organisations, and formulating strategic management plans for regions (as a guide for those in charge of the area -who may be funded by WWF Australia).	"WWF-Australia works to conserve Australia's biodiversity" (Annual report 2005) in terms of plants and animals	Many small targets, pertinent to each conservation area e.g. 60% reduction in greenhouse pollution from electricity by 2050; reduction in broadscale clearing in every state, to have reversed the decline in Australia's freshwater biodiversity by 2010 etc. (Targets tend to be carefully worded such that WWFA itself is not solely responsible for fullfilling these targets.)
Earth Sanctuaries Ltd (ESL)	1985-2005	Australia	Shareholder equivalent of 'donors'. All shares (incl option holders) cld range from approx 6000 to 19000 (depending on whether each shareholder owns more than one class of shares). Ordinary shares 2004: Total 6564 holders. 1-1000 (shares) = 58.4%, 1001-10000=37.9%, 10001-over=3.7%	National, owned 3 properties and managed another (small, <1000ha total)	2004 Income $1.4 million, Loss $2.5 million (Annual Report). 2001: Income $1.5 million, Loss $13.7 million (Annual Report).	Buys up land and converts it to 'sanctuaries' (fences it, rids area of introduced predators, re-introduces local native species) in an attempt to save Australia's threatened mammal species. To achieve goals, ESL had a 'private sector approach to saving wildlife', namely shareholder investment. All threatened species under management were listed in ESL's annual reports as 'living assests' with corresponding values for their threatened status.	Profitable conservation of Australian wildlife by developing sanctuaries for wildlife and ecotourism . Three main environmental objectives: 1) save each of Australia's threatened mammal species; 2) neutralise greenhouse gas emissions through regrowth; and 3) restore Australia's biodiversity to its pre-European state in each biogeographic region of Australia.	By 2025, to save every threatened Australian terrestrial mammal species by having 1% of the country dedicated to 'Earth Sanctuaries' in each of the 80 habitat regions.
Jane Goodall Institute	1977	Programs throughout Africa	For entire Institute: No numbers given. Sources of total funds rec'd (2004): 76% contributions, 13% grants, 11% misc.	For Sanctuaries: approx. 40, 000 acres (some of which is co-managed for other purposes).	For entire Institute: income: $8.85m; expenditure: $8.43m (US$?).	Has a number of primate sanctuaries in Africa, which act as a refuge for orphaned chimpanzee. (This is just one component of the Institute). There are sanctuaries in the Republic of Congo (Tchimpounga Sanctuary and Tchimpounga Reserve), Uganda (Ngamba Island Sanctuary), and Kenya (Sweetwater Sanctuary).	For Sanctuaries: to provide a safe haven for orphaned chimps. For entire Institute: 1) To increase primate habitat conservation; 2) To increase awareness of, support for and training in issues related to our relationship with each other, the environment, and other animals (leading to behaviour change); 3) expand non-invasive research programs on chimps and other primates; 4) promote activities that ensure the well-being of chimps, other primates, and animal welfare activities in general.	No specific targets.

Organisation	Year Est'd	Location	Benefactor Base	Geographic Extent	$Turnover	Methods	Goals	Targets
The Nature Conservancy	1951	Based in America, works internationally	Approx 1 million members and supporters. In terms of contributions by donor types (2005): 60% individuals, 30% foundations, 6% other, 5% corporations.	International. Has protected approx 117 million acres of land as of 2003	FY2005: Income ~$945 million (!); Expenses ~$701 million.	Broadly: "by protecting the lands and water [that plants, animals and natural communities] need to survive." Specifically: works with businesses, communities, and individuals pursuing nonconfrontational, market-based solutions to conservation challenges. In the US, this involves (among other actions) buying and managing land. Outside of the US, the NC works with government agencies and partner organizations to provide scientific knowledge, infrastructure, training and funding for legally protected by under-funded areas.	To preserve the plants, animals and natural communities that represent the diversity of life on Earth	No specific targets.
Australian Conservation Foundation	1966	Australia		National	~$7 million income, (90% from supporters), expenditure ~$8 million.	Almost purely social. "Works with community, business, and government to protect, restore, and sustain our environment. Seeks change with lasting political, economic and social support."	"ACF will inspire and promote a society which is environmentally aware and responsible". "Committed to inspiring people to achieve a healthy environment for all Australians."	
Conservation International	1987	US Based	Can't find	Works in 40 countries on 4 continents	FY 2005: $92.7 million Expenditure $114.2 million	Uses CABS (established by CI) information to provide funding appropriately, develop policies, garner partnerships, develop scientific management plans. Works with non-governmental organisations, local communities, and indigenous people in biodiversity 'hotspot' areas. Doesn't generally buy and manage land, instead helps fund others (such as local communities, governments etc) to reserve and manage their lands.	From external articles: "To conserve the Earth's living heritage, our global biodiversity, and to demonstrate that human societies are able to live harmoniously with nature." From external articles: Outcome Category: Extinctions Avoided 1. Protect threatened species 2. Downlisting of threatened species; Site Protected 3. Protection of key biodiversity areas 4. Improve veg at key biodiversity areas; Corridors Created 5. Decrease fragmentation 6. Increase corridors	None mentioned. have implemented a 'strategic plan' whcih sets goals to protect biodiversity in priority areas. 1. Prevent the extinction of known vertebrate species within biodiversity hotspots and high biodiversity wilderness areas. 2. Increase protection of key biodiversity areas by 58000 square miles ion hotspots and 193000 sq miles within wilderness areas. More effectively manage 347000 sq miles of existing protected areas. 3. Launch 20 new marine protected areas and establish conservation management regimes in 5 seascapes in at-risk ocean ecosystems. 4. Work with indigenous leaders and communities to safeguard 96000sq miles of indigenous territories within hotspots and wilderness areas. 5. Establish a global conservation agenda. From external articles: 1. No species on Red List 2. The most threatened species are downlisted 3.All Key Biodiversity Areas have legal protection status, with biodiversity as an official goal 4. All Key Biodiversity Areas retain or increase baseline habitat cover 5. Baseline corridor connectivity is retained or increased 6. Baseline suitable habitat coverage is retained or increased.
The Nature Foundation SA	1981	SA	?	SA only	<$1 million	Raise and distributes funds to protect the natural environment, support national parks and save native wildlife in SA. They also manage and revegetate land donated to them, and buy, manage and on-sell land through BushBank SA.	Difficult to find, not clearly stated. They "seek to protect the natural environment, save native wildlife and enhance the parks and reserves system".	None
Australian Wildlife Conservancy	1991	Australia	Not specified. Donations of c.$3 million, grants c.$2.4 million.	National: 917 000 ha (2.3 million acres)	$6 million operational budget	Acquisition of land, management of this land for conservation, science and research, public education. and 'enriching the human spirit'.	The AWC mission is "to establish a national network of sanctuaries protecting a diversity of native wildlife and habitats."	No specified organisational targets.

MEASURING AND EVALUATING CONSERVATION SUCCESS

Measuring and evaluating conservation success involves two distinct components:

- identifying what constitutes a conservation return or success; and
- determining how to measure and evaluate this success.

Identifying a conservation success usually requires establishing conservation goals and objectives to be achieved. Measuring and evaluating success requires consideration of issues such as establishing the temporal and spatial extent of the evaluations, approaches to measurement and establishing benchmarking. Each component is critical to effective assessment: without a clear understanding of what the project's goals and objectives are, measurements of biodiversity may be irrelevant or meaningless. Conversely, without a practical method for measuring the objective(s), the degree of success cannot be understood.

Defining Conservation Success

Understanding what is meant by the term 'success' for a particular organisation is the first step to measuring and evaluating conservation success. In a broad sense, success is based on what an organisation is trying to achieve. In the conservation sector, this tends to be related to the conservation of biodiversity and/or the sustainability of a system. Concepts such as 'biodiversity' and 'sustainability' are difficult to understand, define, and consequently difficult to measure. They are often regarded as 'fuzzy' concepts.

Biodiversity refers to diversity at three levels: genetic; species; and ecosystem (CBD 2002). Information about the geographic distribution and temporal dynamics is limited for all three levels. Genetic diversity is particularly problematic (Australian Government 2006a). In any case, there is a need for organisations to clearly define which components of biodiversity are the focuses of their conservation program.

Success relative to pre-set goals and objectives

Goal-setting helps to define what the organisation or program is trying to achieve, and consequently how they are defining success. A goal defines the broader desired state to which the project contributes (i.e. what the program wants to achieve), and hence provides a general definition of success in terms of that particular program. While this is generally specific to each conservation organisation, there are some commonalities. The aims of many programs tend to be relatively broadly defined and considered in the light of a 'long-term vision' which acts as a compass to guide everyday activities rather than the criteria against which success is measured. For example, Bush Heritage states that it is committed to "preserving Australia's biodiversity by protecting the bush" (ABHF 2006). Similarly, TNC aims "to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and water they need to survive" (TNC 2006), and WWF-Australia is working "to conserve Australia's biodiversity, using scientific research and the best available solutions to address the nation's greatest environmental threats" (WWF-Australia 2005).

The Australian Government also has a number of 'aspirational outcome statements' which act as goals for their national monitoring and evaluation framework (Natural Resource

Management Ministerial Council 2003) such as “ecosystem services and functions are maintained or rehabilitated” and “biodiversity and the extent, diversity and condition of native ecosystems are maintained or rehabilitated”. Being expressions of general intent, such aims can often have differing interpretations, leading to varying expectations of the type and degree of outcomes. Furthermore, their generality makes them difficult to measure, and hence difficult to determine whether the program/organisation has ‘been successful’ and provided a conservation return on its investment.

To promote clarity of understanding and expectations, it is desirable to also have specific objectives that are directly linked to the long-term aspirational goal. These objectives should ideally be SMART: Specific, Measurable, Achievable, Realistic, and Time-specific (Tucker 2005). SMART objectives will serve to establish more clearly what is meant by the long-term goal, as well as providing the first step towards establishing a process for measuring success. For conservation organisations, these objectives should be made clear to all stakeholders. SMART objectives are frequently established but only communicated internally within an organisation.

Objectives should relate to outcomes rather than strategies or actions For example, a project goal may be described as ‘obtaining a conservation easement’; whereas the easement is really a strategy for protecting habitat in order to achieve the goal of protecting a species. Earth Sanctuaries Limited (ESL) had an overall goal of “conserving Australia’s unique biodiversity in a commercial environment”. Their stated objectives relating to this goal are really strategies/actions, e.g. “to develop sanctuaries in the major habitats of Australia” (ESL 2000). When reporting on performance, governments and NGOs have tended to assess and report on actions they have taken rather than the impacts of these actions on the stated conservation objectives(Rudd 2004).

The Use of targets in goal setting

Targets are a tool that tends to be used less often by conservation programs. Conservation target are specific statements defining the state or condition of a biodiversity element (e.g. a genetically distinct population, a species, or an ecosystem) that the conservation project wants to protect or restore through some intervention (WCS 2004). A target differs from an objective in that it is more specific and identifies a particular level or benchmark. For example, ABH has the ultimate goal of protecting biodiversity, objectives such as maintaining genetic variation, integrated populations etc, and the target of owning and/or co-managing 1% of Australian land. Similarly, Earth Sanctuaries Limited (ESL) had the ultimate goal of ‘economic and ecological sustainability on the ESL reserves’, the objectives to (a) save each of Australia's threatened mammal species; (b) neutralise greenhouse gas emissions through regrowth; and 9c) restore Australia's biodiversity to its pre-European state in each biogeographic region of Australia, and the target ‘by 2025, to save every threatened Australian terrestrial mammal species by having 1% of the country dedicated to 'Earth Sanctuaries' in each of the 80 habitat regions’. Targets are useful in that they assist in determining whether success has been achieved (‘yes/no we did/did not reach our target’), or how successful a program is (‘we are halfway to reaching our target’). Targets can be set incrementally so that ‘small steps’ of success can be progressively achieved and reported

Quantifying Conservation Success

Determining what to measure in evaluating success is the second step in an effective assessment of conservation success. This step requires considering what variables to measure and why, how they can be measured, who should measure them, together with when and where they should be measured. Issues associated with these questions are discussed below. Note that here we use the term 'measure' to refer to all forms of measurement including 'surveying' and 'monitoring'.

The Purpose of the Assessment

Program assessments have a number of uses. The principal purpose of reporting conservation success for ABH is to provide increased accountability to donors. Accountability (and certification) assessments consider whether an organisation is fulfilling its obligations to donors, the public, the government, or some other enforcement entity. There is an increasing need for accountability assessments that report on effectiveness and success (in terms of impacts on conservation), particularly for donor-based organisations in order to retain donor support and investment (Christensen 2002). However, assessments also have a number of other uses. In addition to accountability assessments, there are three other widely accepted purposes of evaluation: basic research; status assessment; and effectiveness assessments (e.g. Chelimsky and Shadish 1997; Patton 1997; Mark et al. 2000).

Basic research assessments encompass the collection of information to improve knowledge of a topic (Stem et al. 2005). Status assessments are undertaken in order to gain a general sense of the current condition of biodiversity. Effectiveness assessments are undertaken in order to understand if conservation interventions are having their intended effect: "Are the actions that we are taking having their intended impact?" (TNC's Developing Strategies Group et al. 2003). Effectiveness assessments differ from status assessments because they must link actions to impacts. The majority of effectiveness assessments are undertaken with the intent of using the results of the assessments to learn from and adapt their management strategies accordingly; commonly termed adaptive management. The central tenet of adaptive management is the incorporation of formal learning processes into conservation action to systematically test assumptions in order to be able to adapt and learn (Salafsky et al. 2002).

The information provided by the different kinds of program assessments can thus have a variety of uses and benefits: increasing management effectiveness and cost-effectiveness; increasing stakeholder confidence; research; and for informing policy. Although the increasing need for reporting identified by many authors (e.g. Kleiman et al. 2000; Stem et al. 2005; Tucker 2005) is driven dominantly by accountability purposes, the use and benefits of assessment are clearly much broader than this, and have the potential to benefit the user in many ways. Despite these benefits, comprehensive assessments are considered rare due to the lack of funding; 'participant resistance' is also considered an important factor (Backhouse et al. 1996; Clark 1996) as cited in (Kleiman et al. 2000).

Candidate Measures

Direct and indirect measures

Success can be measured directly and indirectly. Direct and indirect measures of success are best understood in terms of the logical components of the management process that underpins the development and implementation of conservation programmes (Figure 1).

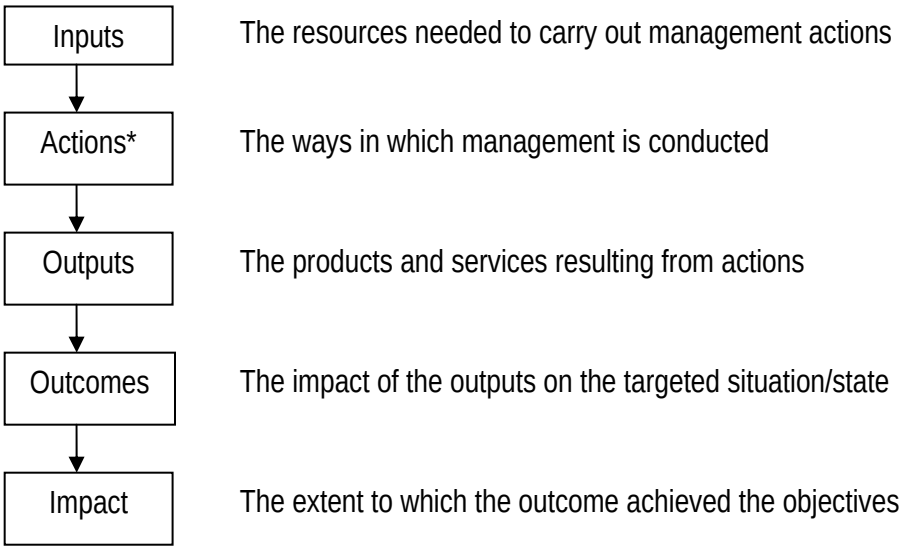

Figure 1: Components of the Management Process. Modified from Hockings (2000) and Treasury Board Secretariat (2001).
* Used synonymously in this review with the term 'processes'

Note that many authors refer to outcomes and impacts synonymously, whereby an 'outcome' is the impact of the outputs on the situation or state with respect to the objectives. The two components have been separated on previous occasions to highlight the difference between measuring 'effects' and measuring 'effectiveness'. In other words, 'effects' are the impacts of management actions without reference to a particular objective or benchmark, while 'effectiveness' puts some sort of rating on the effects by considering what the objectives are. This is an important point, and the two components are separate categories in the review of approaches (Table 3) for this reason. In general however, unless otherwise specified, this broader definition (in which outcomes and impacts are synonymous) will be used in the review in order to avoid confusion.

Direct measures of success involve measuring outcomes: the effect the organisation has had on a situation in relation to its objectives (Jones and Dunn (Hocking) 2000; Booth et al. 2002; Palmer et al. 2005; Tucker 2005) (Figure 2). They measure what an organisation has achieved in relation to the stated objectives; as opposed to the activities that contributed to the success, such as the proximate steps taken along the way. Direct measures therefore have less uncertainty attached to them than indirect measures; these require their potential effect on the project's objectives to be extrapolated or predicted in some way (WCS 2004).

Depending on the goals and objectives specified by an organisation, success can be difficult to measure directly. This is because it is resource intensive to collect the required

biodiversity information; in terms of finances, time, skill, and knowledge. Furthermore, biodiversity often responds to management actions slowly and in ways that are complex and often not completely understood (Tucker 2005; Gilmore et al. 2006) (discussed further below). Consequently, many organisations use indirect measures to provide information about conservation success such as information about inputs, activities and outputs (Figure 2, and see also Table 1).

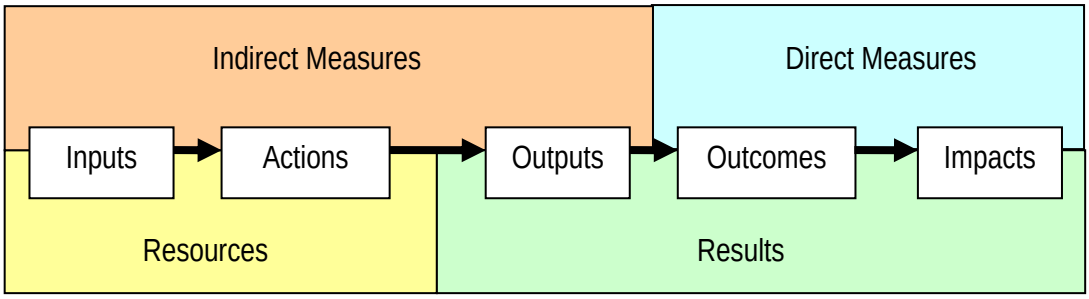

Figure 2: The relationship between components of the management process chain and measures of success.

Indirect measures: inputs, actions, and outputs

Collectively, indirect measures are arguably the most commonly used method of quantifying conservation success. Inputs are the resources required to carry out the management actions (Stem et al. 2005); actions or processes are the methods by which the actions are carried out (Rudd 2004), and outputs are the products or services which are produced and delivered by a program (DEHAA 1999).

The types of data which are used to measure outputs may consist of biological, social, and economic data. Examples of biological data which quantify outputs include: the area of land fenced to keep out livestock; the extent of weed removal; the number of seedlings planted for revegetation; or the number or extent of land from which feral species were removed. Social data which quantifies outputs include: the number of education programs run; the number of volunteers working on aspects of the program; or the amount of funding given to other (conservation-focused) organisations. Further examples of data are given in 'Communicating Conservation Success to Stakeholders' of the review.

Measuring outputs is useful as an indicator of conservation impact, and as a component of the 'project cycle' involved in adaptive management. However, outputs generally provide minimal information on the actual impacts on biodiversity these actions have had or are having (DEHAA 1999; TNC 1999; Cifuentes et al. 2000; Hockings et al. 2000). Outputs can therefore only be considered as an indirect measure of conservation success, and are an unsatisfactory measure of success when used in the absence of direct measures such as outcomes and impacts (Treasury Board Secretariat 2001).

Direct measures: outcomes and impacts

Conservation impacts refers to the net effects of activities on the state or condition of specific target biodiversity components, and is here used synonymously with the term outcomes in keeping with common use (e.g. DEHAA 1999; Hockings et al. 2000; Tucker 2005). Outcomes

are generally considered in relation to the program objectives (Hockings et al. 2000), and as such are a direct measure of the success or achievement of the program. It can sometimes be difficult to distinguish between outcomes and outputs. Their difference is best illustrated using an example.

Assume a scenario where the goal is the conservation of biodiversity at a particular site or location; the objective is to maintain the viability of a focus species; and viability is to be assessed based on measurements of population abundance counts. In this scenario, a conservation outcome could be an increase in the number of individuals of the surveyed animal population on the assumption that an increase in abundance indicates an increase in the viability of the species at the site. Note that a management 'output' in this example may be the implementation of a feral animal eradication program to reduce predation on the focus species.

For evaluation of program goals strictly concerning biodiversity conservation, outcomes should ideally relate to the conservation status of an element (also referred to as 'component') of biodiversity. The assessment of conservation status would usually be measured using biological data. Depending on the scale of the program and its objectives, biological outcomes may be assessed using measures such as the 'population viability' of a focus species (quantified using attributes such as estimates of population size), trends in the distribution and abundance of selected species, and changes in the extent and condition of vegetation. The 'condition' of vegetation can be considered either in relation to its capacity to provide habitat resources for a particular species or group of species, or as a relative absolute measure benchmarked against the pre-European vegetation condition.

Overall, outcomes measurement is not commonly used in assessments of conservation success (Hockings 2000; Jones 2000) (see also Table 3); to which a number of factors contribute. The principal factor is expense as outcome measurement can be costly in terms of time, money, and equipment. In recent times, there have been financial constraints on governments and NGOs, and this has led to decreased monitoring and evaluation strategies being implemented and conducted (Saterson et al. 2004). Economic constraints also occur due to perceived or real pressures placed on organisations to direct the majority of funding to management activities rather than to evaluating how the impact or conservation success of these actions (Saterson et al. 2004). Other difficulties associated with the use of outcome approaches include the pre-requisite of access to information from long-term monitoring schemes and the lag-time of the response of many biological variables to management outputs. Also, the difficulty of attributing outcomes to management actions when there are multitudinous explanatory variables such as climatic factors that potentially affect the results.

Indirect versus direct measures

As noted above, both direct and indirect measures of success are used to evaluate conservation programmes(WCS 2004; Stem et al. 2005). If indirect measures are the sole measure, the tradeoffs from not using direct measures should be identified and acknowledged. For example, the Living Landscapes project (WCS 2002; WCS 2004) uses the Pressure-State-Response (PSR) system and suggests using actions (termed 'interventions') and threats as indirect measures of success. The project noted that the time frame to see results, and the costs of monitoring, decline as monitoring shifts from directly measuring changes in wildlife and their

habitats, to measuring reduction in threats, through to measuring whether or not an intervention was implemented as planned. However the level of confidence in whether the information explains anything meaningful about the conservation success also decreases (WCS 2004) (Figure 3).

The Australian Government, as part of its National Monitoring and Evaluation Framework, suggests that while the focus of evaluation should be on outcomes, provision should exist for evaluation of outputs (in terms of on-ground actions) in order to calculate their effectiveness in achieving the outcomes (Australian Government 2006b). While it may be more resource intensive to monitor outcomes in comparison to indirect measures, it is in a sense a shortcut by which the indirect measures only need to be examined if the outcomes are not being achieved.

Some organisations argue that if the monitoring and evaluation approach is built on robust program logic, then inferences can be made about the likely affect of indirect measures on outcomes - that is, indirect measures may have a predictive capacity. Program logic refers to the theory and assumptions behind the monitoring and evaluation program - the 'causal links' between each component of the management cycle – the reasons why things are done (Clark and Sartorius 2004). If these links are based on strong, explicit, scientifically based relationships and assumptions, then this increases the predictive ability of each component in the program. For example, the monitoring results of an indirect measure such as an output can be used to predict the potential impact on the state of the biodiversity component. This idea is used in the Biodiversity Benefits approach for predicting the effects of revegetation efforts in Australia (e.g. Freudenberger and Harvey 2003; Freudenberger and Harvey 2003; Freudenberger and Harvey 2003; Freudenberger et al. 2004) and is also used as the basis for reporting by regional NRM bodies (Goulburn Broken CMA pers. comm). This method may be a time and cost effective method of accountability reporting, however unless the statistical confidence in the scientific predictions of outcomes is high, then the confidence in the impact on biodiversity will not be comparable to measuring and reporting on outcomes.

Contextualising success

While biodiversity conservation success is most usefully assessed using direct measures of outcomes or impacts, it is often useful and informative to place the outcomes measures in context by providing information about (a) the pressures or threats operating on the system,(b) the response or actions taken to alleviate this pressure (discussed above), and (c) the efficiency of this response. This information complements outcomes measures and allow an understanding of the biological and organisational context in which the success or lack thereof occurred (Kleiman et al. 2000).

The pressure and response components have been included in a number of conceptual frameworks which were introduced throughout the 1990's (OECD 1993). The PSR is a conceptual framework based on the following logic: human activities exert pressure on the environment through a range of social, political and economic activities. This pressure changes the quality and quantity, or state, of the environment. Society reacts to these changes through various environmental, economic and policy responses. Other similar frameworks have since been developed, including the "Driving forces-Pressure-State-Impacts-Response" (DPSIR)

framework (Rigby et al. 2000), and the "Actor-Actions-Threats-Biodiversity target" framework (Margoluis and Salafsky 1998).

Although these frameworks may be useful in theory, in practice it can be very difficult to quantify a pressure (for example, the effects of intensive land use practice on properties adjoining a conservation reserve, or the effects of an invasive species on the carrying capacity of native species within an area of land). Even if it were possible to measure a particular threat, it then becomes difficult to follow the cause (response/process) and effect (change in degree of threat leading to change in environmental state) chain due to the host of other potential explanatory variables that may be impacting the pressure and state components. Consequently, most approaches to measuring conservation success tend to focus on measures of response variables (inputs, actions, and outputs) as discussed previously. However, the international demand for accountability is driven by an emphasis on the impacts (or 'outcomes') of management responses, and hence organisations that focus on some aspect of environmental health are most concerned with assessing the state variables since these are the most correlated to the condition of the environment.

The efficiency of the response to a threat or management objective has been called 'process' information. Process refers to "the organisation and function of conservation programs" (Kleiman et al. 2000). Measures of program process enable the efficiency of the response to the objectives to be assessed. This includes the methods of response (the types of actions carried out), the speed of the response, and interactions (communication, conflict resolution, activity coordination) between stakeholders (both internal and external). While this is an important aspect of evaluation, the benefits provided by its assessment tend to dominantly internal (i.e. they are useful for learning and adapting program management). As such, their use in a tool designed for reporting success to stakeholders may be minimal.

Process variables can be thought of as an evaluation of the range of response parameters (i.e. inputs, actions, and outputs and their constituent variables). A number of approaches focus on this aspect of management effectiveness. The IUCN/WWF Forest Innovations Project (Hakizumwami 2000) used a Participatory Rapid Appraisal approach which focused on the evaluation of the current state, threats and policy environment (context) of the Dja Reserve in Cameroon (Africa), reserve system design and management planning (planning), the resources needed and available for management (inputs), and the way in which management was conducted (processes). While this was a relatively successful approach in identifying management issues that needed to be addressed in the reserve, on its own it would not be suitable to fully evaluate conservation success.

Lag-time of biophysical responses to conservation actions

Associated with most land acquisition and management actions is a 'lag-time' in which the environment (as quantified by the indicator or indicators) responds to a management action. Depending upon the indicator or feature in question, this lag-time can vary in time-to-respond from slow (such as soil organic matter content) to fast (ephemeral populations) (Gilmore et al. 2006). As such, for variable periods after conservation inputs and actions, there may be no response, or a minimal response in terms of biological variables. Frequently monitoring must be continued for between 5-50 years before trends can be detected (Grieve 2003; WCS 2004). The

"National Natural Resource Management Monitoring and Evaluation Framework" (Natural Resource Management Ministerial Council 2003) recognises this and is attempting to put in place processes to measure and report on performance of interventions that extend beyond the length of the actual intervention/program.

As a result of the lag-time, a number of conservation organisations (see Table 3) have found it necessary to measure conservation success in a way other than, or in addition to, outcomes in terms of environmental state/health. These indirect or proxy measures may be measures that are more likely to change rapidly in response to management. The P-S-R and associated conceptual frameworks are one method which provides a solution to this problem (these frameworks are discussed further in "Contextualising success"), providing it is possible to quantify the threats and actions effecting the objectives. Given the difficulty of measuring pressure and state effectively, further compounded by the lag-time associated with both, most conservation organisations resort to using measures of response to quantify their performance.

Another option that circumvents to some extent the difficulty of response lag-time is the formulation of 'stepwise' measures of success (intermediate level criteria rather than a single target or ultimate goal). These targets can be set in accordance with the lag-time phenomena, in that the initial targets are relatively low, and increase exponentially with time (e.g., the Living Landscapes Program (WCS 2002)).

A third option was used by TNC as part of its 5-S framework for site conservation (TNC 2000). It involved the use of short-term indicators called "Conservation Capacity Indicators" which reflect the capacity of the project to implement effective strategies at project sites. There are seven indicators used, assessed under the following five headings: (1) site leadership and support (leadership capacity and presence of a support team);(2) strategic conservation approach (strategic planning around conservation targets and threats, stakeholder analysis, and adaptive management and monitoring approach);(3) functioning conservation area and resource use zones (formal protection status, personnel and infrastructure and land use zone);(4) financial resources (current and long-term sustainable funding); and (5) site constituency (level of stakeholder engagement and degree of stakeholder support). These indicators are context (situation analysis), input (resource need and availability), and planning based, rather than direct measures of outputs or outcomes; hence they indicate the capacity of the project to achieve outcomes in the future.

Surrogate measures: indicators

Due to the difficulty of measuring biodiversity outcomes comprehensively, indicators are used in the majority of assessment methodologies. An indicator is a measurable entity used to assess the status and trend of a specific factor (Tucker 2005). Indicators have a number of benefits that have led to their frequent use by both governments and NGOs. However, they must be used with an understanding of their limitations. Indicators by definition are only a subset of information about the whole, and the link between the subset and the whole is sometimes tenuous and/or unquantified. The most important point concerning the use of indicators in evaluation systems is that they should be directly linked or related to the objectives. Too often have indicators been chosen for the wrong reasons such as they are easy to measure, they were available in a generic list, or they were measured historically (Gilmore et al. 2006). This results in

data that does not relate to the objectives, and should not be used to assess success. A number of programs have been developed to help reduce the use of inappropriate indicators, such as the Strategic Indicators Selection System (StratISS) (FOS n.d.), and World Bank Monitoring and Evaluation guidelines (World Bank 1998).

Data type: biological and social information

Traditionally, techniques for measuring conservation success have focused on quantifying biological information. Biological information here refers to information that quantifies a biological, biophysical or ecological parameter, such as species richness, vegetation cover, soil type, rate of carbon sequestration etc. The actual biological variables being utilised in monitoring and evaluation programs varies, depending on the objectives of the organisation and other characteristics such as the scale at which it operates and the management techniques they employ to achieve their objectives. Variables range from counts of species richness and abundance, to measures of habitat quality and vegetation condition, as well as larger scale measures of landscape health using fragmentation indices. An increasing degree of technological sophistication coupled with growing scientific knowledge has led to new biological variables being measured, particularly from Remote Sensing (RS) sources and GIS-based analyses. A selection illustrating the range of biological variables used for evaluation of conservation success is listed in Table 2.

Table 2: Biological variables used as measures of conservation success or achievement

Organisation/Method	Variable	Measure**
Biodiversity Benefits Index Bushweb Project (North Midlands, Tasmania) (Freudenberger and Harvey 2003)	Total increase in native vegetation cover	Indirect
	Fencing efficiency (total length of fencing per area of remnants protected)	Indirect
	Reduction in vegetation isolation	Indirect
National Framework for Natural Resource Management Standards and Targets (Natural Resource Management Ministerial Council 2003)	Land salinity: location and size of salt affected areas	Direct
	Native vegetation communities integrity: the extent of each priority native vegetation type by IBRA subregion measured in hectares	Direct
	Ecologically significant invasive species: the area and density of weeds under active management	Direct
	Turbidity/suspended particular matter in aquatic environments: Total Suspended Solids	Direct
Convention on Biological Diversity 2010 Biodiversity Target	Change in status of threatened species: Red List index	Direct
	Trends in genetic diversity of domesticated animals, cultivated plants and fish species of major socio-economic importance: ex-situ crop collections, fish genetic resources	Direct
	Trends in extent of selected biomes, ecosystems and habitats: coral reefs, grasslands/savannahs, seagrasses, tidal flats/estuaries	Indirect
	Coverage of protected areas: coverage according to World List of Protected Areas	Indirect

**Direct or Indirect Measure of Biodiversity Conservation Success

The historical concentration on biological information appears to have occurred at the expense of social information. Many authors argue that assessments based on only biological measures is insufficient for evaluation of ecological health, and the performance of a conservation program (e.g. Kleiman et al. 2000; Booth et al. 2002; Stem et al. 2005). Social information is considered necessary to provide a broader, more complete understanding of program

achievement. The term 'social information' tends to be used very broadly within conservation reporting fields to mean information that quantifies a non-biological parameter, and can include political, economic, and cultural measures.

Social measures include indices such as public support, inter-organisational relations, relevant values, attitudes, and knowledge of key stakeholders, and trends in each of these variables (Reading and Kellert 1993). Social data is perhaps of greatest importance for programs that utilise interdisciplinary methods for achieving success, as logically an interdisciplinary approach requires an interdisciplinary evaluation. Some programs will have a greater social focus and social interaction than others. For example, the Jane Goodall Institute has a heavy focus on social issues, to the extent that they are included as one of program's objectives: *"to increase awareness of, support for and training in issues related to our relationship with each other, our environment, and other animals (leading to behaviour change)*". This objective is achieved through programs such as "TACARE: Community Centered Conservation and Development" (JGI 2006). In contrast, Conservation International's program is focused almost entirely on quantitative biological objectives, and is generally concerned with social issues only to the extent that they impact on the status of the biological objectives. Regardless of the extent of integration of social measures into a conservation program, they play a role in, and impact on many aspects of conservation (Stem et al. 2005). While acknowledging that the inclusion of both data types may provide a more complete understanding of program achievement, the purpose for which the evaluation is being conducted will at least partially guide which types of data are measured. Those authors arguing for the inclusion of social and process measures in an evaluation framework are primarily emphasizing their benefit in terms of the learning and adaptation they make possible for the program. Stem et al. (2005) state that the different types of data have different uses, and that it is "*important to […] know when it is most appropriate to use each of them. […] Quantitative data [such as biological data] are particularly useful for showing trends or comparing sites and strategies, whereas qualitative data [such as most social and process data] help to explain the context of those trends."* If the purpose of the monitoring program was solely to provide accountability of performance to stakeholders, then biological data may be a sufficient (albeit less comprehensive) means for doing this. In contrast, process criteria are important as they provide a measure of the efficiency and speed with which objectives are reached, which is of most use for adapting program management rather than for reporting to stakeholders. Having said this, given the benefits a comprehensive monitoring program can provide, it would seem a lost opportunity not to include and use all data types.

Temporal Resolution of Assessments

Measurements of outcomes should ideally begin before any biodiversity actions take place, and continue after the actions have finished (Tucker 2005). By beginning before the processes or actions have begun, a baseline set of data can be established against which assessments of performance can be made (Tucker 2005; Gilmore et al. 2006). It is also necessary to continue monitoring after the actions have been completed because biodiversity, and indeed many environmental processes and states, often do not respond immediately to management actions. There is generally a time-lag between when the action was carried out and

the occurrence of the anticipated outcome (as discussed above). Thus, in order to capture this long-term monitoring is needed.

There is little available information available on how often assessments of information should be made, perhaps because it depends heavily on the requirements of the end user. Companies conducting impact assessments are generally only required to undertake one or two assessments in order to provide the prescribed information. This information is used to determine potential impacts from development actions, and is judged on the current status and vulnerability of the particular area and biodiversity assets in question, rather than trends or changes in variables over time. In contrast, The Nature Conservancy PROARCA/CAPAS Monitoring Strategy for Protected Areas in Central America conducts a management effectiveness assessment every 6-12 months on an ongoing basis, which generally begins at the establishment of a protected area and continues theoretically for as long as the area remains protected (Courrau 1999). This information is used to evaluate the effectiveness of management, and then change management strategies accordingly in order to achieve maximum possible effectiveness. The Australian Government National M&E Framework reports on resource condition trends and associated measures at least every five years (Natural Resource Management Ministerial Council 2003). The longer reporting cycle reflects the size of the program, and the huge volume of data to be collected and evaluated.

Spatial Resolution of Assessments

The geographic scale at which an assessment is conducted may range from the local (patch) scale, landscape (sub-catchment) scale, bioregional scale, to the continental scale. The geographic scale at which an assessment is conducted will depend on the size and extent of the program or project; a national or international organization or government department will require a larger scaled assessment than a small community-based grass roots project. It will also be dependent on the specific needs of the program or project. For example, WWF uses the WCPA Evaluation Framework to conduct assessments of large protected area systems (i.e. WWF Rapid Assessment and WWF Brazil) for land prioritization decisions and advocacy. The Nature Conservancy (Measures of Success) and WWF-CATIE use evaluation methodologies at the scale of one or more protected areas (usually landscape scale) for adaptive management and accountability, while at the next scale down Fraser Island and Tasmanian Wilderness World Heritage areas (Australia) both have detailed site specific monitoring and evaluation programs primarily for adaptive management.

Large scale programs such as those run by national donor-based conservation organisation can conduct a single assessment of the program as a whole (e.g. WWF Brazil), or can assess the organisation in terms of the cumulative total of its individual projects or sites (e.g. Earth Sanctuaries Ltd). The latter is generally more data and resource intensive, but provides greater benefit for adaptive management at the project scale. There is no set protocol for large scale assessments; again, it is dependent on the requirements of the program. At the site scale, it has been recommended that the spatial extent of outcomes monitoring should take into account all areas that are impacted by the conservation activity (Tucker 2005). However, this may not always be possible, due to practical issues associated with land tenure considerations, and also

due to the time and resources required to conduct such geographically comprehensive assessments.

Conduct of Assessments

Internal versus External Evaluations

Typically most evaluations conducted by conservation organisations are internal: that is, they are made by, paid for, or controlled by the organisation. However, as Tucker (2005) points out, this can lead to conflicts of interest due to the high pressure to show success, in public, private, and corporate organisations. Very few conservation organisations report failures, due to the concern that if such information is reported it may affect donor support (Christensen 2002; Saterson et al. 2004). External or independent audits which are subject to peer review can be used to avoid the potential conflicts of interest. External evaluations often increase stakeholder confidence in the results of the evaluation (Kleiman et al. 2000), and help promote unbiased representation of results, different perspectives, and different ideas (Janis 1972).

While many government conservation organisations are independently monitored or audited, non-government organisations are lagging behind on this issue. This may be primarily due to the higher cost involved (Kleiman et al. 2000) However, given the rising demand for accountability of NGOs by stakeholders, the cost may be a small price to pay to ensure continued stakeholder trust and confidence. Kleiman et al. (2000) suggests that in order to offset the cost of external evaluations, they should be conducted less often (once every five years), while internal evaluations should be done annually.

Stakeholder Inclusiveness and Acceptance

Evaluations can be constrained by a lack of stakeholder acceptance of the assessment process. This lack of acceptance stems from the belief that the assessment is personal (e.g. each staff member is being assessed as to whether they are doing their job properly), and/or because they feel the assessment is not useful or adequate for their needs. IUCN/WWF Forest Innovations Dja Reserve Case Study found that the principal limitation during the process was the "suspicion manifested by the protected area management team toward the assessment". Many stakeholders were involved in this project, including donors, forest companies, indigenous and traditional people. Introductory meetings were necessary to explain the objectives and the importance of assessing management effectiveness.

To overcome this problem, previous experiences (e.g. Hakizumwami 2000; Milne et al. 2000) have shown that involving all stakeholder groups at every stage of both development and implementation of an evaluation procedure leads to a transparent and inclusive evaluation process (Cifuentes et al. 2000), and increases the acceptance and the uptake of evaluation methodologies and also the results of evaluations.

Ideally, the evaluation process should be participatory at all stages of the process, and should seek to involve all relevant organisations and individuals that may have a genuine and demonstrated interest in the management and/or use of a site (e.g. key representatives from institutions, community members, landholders, and donors etc.). Stakeholder involvement "must be participatory, including key representatives from institutions, and organized groups from

communities living within and around the area, making the evaluation transparent and inclusive" (Cifuentes et al. 2000). IUCN/WWF Forest Innovations Dja Reserve Case Study:

Evaluation of Conservation Success

Evaluation is typically defined as the use of monitoring results to judge or calculate the effect of actions relative to a particular outcome or objective (e.g. Hockings et al. 2000; Australian Government 2006a). In other words, the results of the outcome monitoring should be compared to the targets or objectives in order to evaluate whether success has been achieved. Outcome data can also be evaluated relative to: (1) baseline data; (2) a control site(s); and (3) opportunity costs.

Success can be evaluated relative to baseline data levels, which would have been collected ideally before, or as soon as, conservation intervention occurred. Baseline data is a useful method for evaluation, because it entrenches the measure of success in a 'real life', practical basis, allowing any change (positive or negative) to be identified. Most programs do not use baseline data directly as an evaluation tool; instead these data are used to set achievable and realistic targets and/or objectives which are then used to evaluate success.

Evaluation of the results of a project can be between the project site or sites and a non-project, or control, site. For example, difference in snare encounters between a project site with anti-snare hunting efforts and the control site where no anti-poaching are in place. In practice, control sites that possess the same characteristics (both biological and social) as the project site, and for which a difference in the variable of interest (e.g. number of snares) can be attributed to management actions, are difficult to find. As such, this technique of evaluation tends to be less widely used by conservation organisations.

Evaluation of a project site and non-project site is closely linked with opportunity costs. An opportunity cost in this context is the difference between the success resulting from one action or set of actions and an alternative action (Gilmore et al. 2006). Practically, measuring opportunity costs is difficult as they can generally only be speculative. The conservation benefits of buying one block of land versus spending the same amount of money on improving another would be difficult to calculate, and uncertain at best. However, like outputs, evaluation relative to opportunity costs help place success in context.

Standardisation and Transferability of Approach

A standardised approach allows comparison of evaluation results between different levels or projects within a program, between similar programs (e.g. donor-based conservation organisations), and also between dissimilar programs (e.g. government departments, community groups and conservation organisations). Comparisons can allow the identification of techniques and methods that have or have not worked, which in turn feeds back into the adaptive management cycle and leads to better, more effective management practices. The more a particular (i.e. standardised) approach is used, the greater the pool of information that can be compared and the greater the scope for learning and adaptation. This has been recognised by the Australian Government (2006b) which states that measurement methods and techniques should be standardised to facilitate amalgamation and analysis at State/Territory and national levels. The Natural Heritage Trust (NHT) requires that monitoring and evaluation of individual

projects within each investment stream level be conducted in a consistent manner to enable amalgamation of information at each stream level and at the overall NHT level.

Different situations and needs require different approaches and different emphasis. The resources available to devote to reporting systems will vary between organisations and places, which in turn will impact on the approach used. Furthermore, the complexity of biodiversity measures and the consequent need to focus on specific objectives and measures can vary considerably. Therefore the use of a single, global approach is unlikely to be suitable for everyone, and transferring the methods used by one organisation to another is generally not appropriate (Hockings 2000). However, the approach or framework of measurement and evaluation tends to be less driven by objectives than the specific methodology and indicators within the approach, and can be more readily transferred between organisations, even those with differing aims and accounting standards (Margoluis and Salafsky 1998; Mark et al. 2000; Rigby et al. 2000).

Review of Existing Approaches and Frameworks

The focus of this section is on the broader approach used for assessing performance. It does not address practical considerations of environmental measurements, such as selecting sites, establishing transects, and survey techniques (for information on this, see Cooperrider et al. 1986; Carlton 2001). A selection of approaches used by organisations in the conservation sector are analysed with respect to the issues discussed previously in this review. A summary is provided in Table 3.

Table 3: Analysis of Approaches and Frameworks Used in the Conservation Sector for Reporting on Conservation Success.

Acronyms used: 'SA' Status Assessment; 'EA' Effectiveness Assessment; 'AA' Accountability Assessment; 'R' Research; 'RA' Rapid Assessment technique; 'AM' Adaptive Management; 'NS' not specified. Explanations of categories are Scope (PSR): 'P' Pressure; 'S' State; 'R' Response. Data Type (BSP): 'B' Biological; 'S' Social; 'P' Process. 'Measures effects' refers to approaches that measure the impacts (outcomes) of actions (outputs). 'Measures effectiveness' refers to approaches that evaluate the impacts (outcomes) of actions (outputs) against objectives. Brackets around evaluation elements indicates that the particular element was worked through as part of the management process, however it was not evaluated as part of the assessment process.

Approach Type	Purpose	Overview	Scale		Measures Effects Y / N	Measures Effectiveness Y / N	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
WCPA Framework for Assessing Management Effectiveness of Protected Areas	EA	An evaluation framework to provide a consistent overall approach (structure and process) to assessing management effectiveness	Multiple: site, network, landscape level	Multiple	Y	Y	PSR	Context Planning Inputs Process Outputs Outcomes	BSP	NS	(Hockings *et al.* 2000) (Hockings *et al.* 2002) (Hockings 2003)
WWF Rapid Assessment and Prioritization of Protected Area Management (RAPPAM)	SA (RAT)	Based on WCPA framework, designed for broad level comparisons among many (publicly owned) protected areas.	National	Ongoing OR one-off	N	N	PSR	(Context) (Planning) Inputs Processes Outcomes	BSP	I	(WWF 2006) (Ervin 2003)
IUCN/WWF Forest Innovations Project – Dja Reserve Cameroon	EA (RAT)	Assesses management effectiveness. Based on WCPA, uses a Participatory Rapid Appraisal approach. Results summarised using a SWOT analysis and a modified WCPA scorecard. Does not appear to assess outputs or outcomes i.e. assesses only issues associated with management.	Site: Landscape	One-off	N	N	PSR	Context Planning Inputs Process	BSP	E	(Hakizumwami 2000) (Hockings *et al.* 2002)
WWF/ assessment systems	EA	WWF – Central American Office, and CATIE – Agricultural Center of Tropical Investigation and Teaching. Based on De Faria method of evaluating management effectiveness in wilderness areas. Hierarchy of indicators are scored, and results presented as a % of the maximum obtainable score.	Multiple: site, network, program	Ongoing	N	N	PR	Context Inputs Processes Outputs (Outcomes)	BSP	I+E	(Cifuentes *et al.* 2000)
TNC PROARCA/CAPAS Monitoring Strategy	EA	Uses scorecard to monitor protected area management in Central America. Similar to	Site	Ongoing (6-12 monthly)	N	N	PR	Inputs	BSP	NS	(Courrau 1999)

Approach Type	Purpose	Overview	Scale		Measures Effects Y / N	Measures Effectiveness Y / N	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
		CATIE/WWF and Site Consolidation Scorecard, but less complex and comprehensive. 43 indicators within 5 fields: social, administrative, natural & cultural resources, political-legal, and economic-financial. Results expressed as a % of the maximum obtainable score.									
TNC's Rapid Ecological Assessment (REA)	SA (RAT)	Grossmen et al 92 and SBSTAA. Technique to identify/predict where high levels of biodiversity exist. Uses a series of increasingly refined analyses, from GIS to field inventory. Not rapid (can take up to 6 months). Data intense. High skill level required. Only measures state.	Multiple: starts at regional scale and is refined to local scale	One-off	N	N	S	Context	B	I	(Sayre *et al.* 2000) (Grossman *et al.* 1992)
TNC 5-S Framework for Site Conservation: Measures of Success	SA	Process for designing conservation strategies and measuring success of these strategies. Focussed on conservation impact over time. Based on removing threat sources and reducing persistent stresses. Ranks/scores 'biodiversity health' (outcomes), and 'threat status and abatement' (context). 'Conservation capacity' measures are short-term indicators (input and process) which complement previous. Based on quantitative detailed info, reported on a 4 point scale. Have been adapted for use in the UNF/IUCN/UNESCO World Heritage status assessments. Fits WCPA.	Site: Local-landscape	Ongoing (threat status is assessed every 2-3 years, and biodiversity health every 3-5 years, conservation capacity every 1-2 years)	Y	N	PSR	Outcomes (Context) (Input) (Process)	B(SP)	I	(TNC 2000)

Approach Type	Purpose	Overview	Scale		Measures Effects Y / N	Measures Effectiveness Y / N	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
TNC Enhanced 5-S Project Management Process	EA	Modified version of the original 5-S Framework. Changes are principally related to an incorporation of adaptive management project cycle characteristics into assessment. Greater focus on social and process data within response fields, and a clear understanding of how results can be used for learning. Only monitor and evaluate outcomes, but clear program logic allows evaluation of previous steps.	Site: Local to regional	Ongoing	Y	Y	PSR	Outcomes (Context) (Process)	B (SP)	I	(TNC's Developing Strategies Group *et al.* 2003)
CI Rapid Assessment Program (RAP)	SA (RAT)	Technique for rapidly assessing the conservation value of land in terms of biological and social data.	Regional	One-off	N	N	S	Context	BS	I	(Wright *et al.* 2006) (CABS 2006)
Canadian Government Results-based Management and Accountability Framework (RMAF)	1. AA 2. EA	Framework to support managers in measuring and reporting on outcomes throughout duration of project or policy (e.g. CIDA RBM approach)	Project/ policy based	Ongoing (project duration)	Y	Y	SR	(Inputs) (Process) (Outputs) Outcomes (Impacts)	Variable	I (E support)	(Treasury Board Secretariat 2001) (Rudd 2004)
AusAid Guideline: The Logical Framework Approach	EA	An analytical, presentational and management tool for planners and managers, which involves problem analysis, stakeholder analysis, developing objectives and selecting an implementation strategy. Logframe matrix summarises this info.	Project based	Ongoing	Y	Y	PSR	(Inputs) Process Outputs Outcomes	Variable	I	(AusAID 2005) (Tucker 2005)
DEH State of Environment Reports	SA	A strategic tool for monitoring the state of the environment and environmental performance, and for guiding environmental management.	State and country (regional to national)	Ongoing	N	N	SR	Context (state and threats)	BS	I (E advisors)	(DEHAA 1999) (CES 2006)

Approach Type	Purpose	Overview	Scale		Measures Effects Y / N	Measures Effectiveness Y / N	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
TNC Site Consolidation Scorecard	SA	Tool for assessing a site's progress towards achieving goal (functionality/consolidation). Subjective assessments of the implementation and quality of actions and site management (process) over life of project. Measured against baseline assessment	Property and network	One-off and ongoing	N	N	R	Planning Inputs Process	SP	I	(TNC 1999)
State of the Parks (DEC NSW)	1. SA 2. EA	Subjective assessments of the condition and management of NSW Parks using a maximum of 16 indicators relating to heritage, community, threats, and capacity. Limited biological information collected (e.g. on biodiversity status).	Property and state	Ongoing	N	N	SR	Output Outcome	SP	I	(NSW NPWS 2001) (DEC NSW 2004)
Impact Assessments: Environmental Impact Assessment (EIA)	EA	Assesses the environmental impacts of proposed development changes. Tend to be site focussed, don't give full consideration to cumulative impacts, subject to political will, advocates mitigation of negative impacts rather than advocating proactive alternatives.	Multiple: local to catchment	One-off	Y	N	PS	Context (state and threats)	BS	I/E	(Bisset 1996)
Impact Assessments: Strategic Environmental Assessment (SEA)		Similar concept to EIAs: however SEAs tend to operate at a higher level (ie. at a policy/planning level as compared to the ___ level of an EIA)	Multiple: local to catchment	One-off	Y	N	PS	Context (state)	BS	I/E	(Dalal-Clayton and Sadler 2005)
Impact Assessments: Biodiversity Impact Assessment (BIA)		Similar concept to EIAs, BIA's are a new tool that incorporates biodiversity and sustainability concerns	Multiple: local to catchment	One-off	Y	N	PS	Context (state and threats)	BS	I/E	(Bagri and Vorhie 1997)
Impact Assessments: Social Impact Assessment (SIA)		Similar concept to EIA's: assesses the social impacts associated with proposed development changes	Multiple: local to catchment	One-off	Y	N	PS	Context (state and threats)	S	I/E	(Burdge 2004)

Approach Type	Purpose	Overview	Scale		Measures Effects Y / N	Measures Effectiveness Y / N	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
Biodiversity Benefits Framework	EA	A methodological framework for assessing the biodiversity benefits of vegetation enhancement activities. Uses four principal steps, which involve identifying threats, predicting expected response(s), choosing monitoring method, and assessing monitoring results. 'Benefits' evaluated as actual changes compared to predicted changes. Limited guidance to reporting given.	Multiple: local to catchment	One-off	Y	N	PSR	(Context - threats) (Outputs) Outcomes	B	I	(Freudenberger and Harvey 2003) (Freudenberger *et al.* 2004) (Freudenberger and Harvey 2003)
CI's Outcome Monitoring protocols	EA	Divides outcomes into three categories: extinctions avoided, key biodiversity areas protected, and corridors created. Each outcome has two core indicators (state) plus 4-5 supplementary indicators (response). Simplistic, quantitative, measurements may be difficult.	Site/project	Ongoing (bi-annual assessment)	Y	Y	S(R)	Outcomes (Inputs) (Process) (Outputs)	BS	I	(GCF 2003)

Advantages and disadvantages of prevailing approaches

There have been other reviews of approaches for measuring the success of biodiversity conservation (e.g. Hockings 2003; Stem et al. 2005; Tucker 2005). Summaries and analyses of the approaches can be found in the review articles. By analysing the summaries of approaches with reference to and understanding of the previously stated issues associated with performance measurement, a number of common strengths and weaknesses become apparent.

The most common advantages of the approaches are:

1. Standardisation: in this case the term refers to comparability between reports from organisations using the framework. Standardisation is an advantage because it allows evaluation not only between sites but between organisations using the framework.
2. Simple self-assessment system: is an advantage due to the reduced resources needed to carry out monitoring and evaluation, including reduced time, knowledge/expertise, and funding. Furthermore, it does not require external personnel.
3. Allow comparison over time: the approach allows the same measurements to be made over time, thus allowing results to be comparable.
4. Enables reporting at different levels: (e.g. site, sub-catchment, catchment/regional, national, global): scale is an important issue to consider when evaluating biodiversity conservation success, for adaptive management and when considering the information needs of the different stakeholder groups.

The most common disadvantages of the approaches are:

1. Indicators are a) poorly defined, and b) inappropriate (do not relate to or reflect outcomes/impacts): the lack of specific definition for indicators used for monitoring and evaluation systems results in multiple interpretations of each indicator; and this lack of tight linkage to outcome measurement and in turn the objectives. Indicators which have been chosen from a generic list or which have been misinterpreted due to poor definition will result in measurements that do not accurately reflect conservation success and are not as useful as they could be for feeding information back into the project management cycle.
2. Subjective assessments: Subjective assessments are not necessarily a weakness per se, however by definition they are influenced by user bias and are consequently less comparable. This can be minimised to some extent by the provision of detailed guidance and criteria for assessments. For example, The Nature Conservancy Parks in Peril site consolidation scorecards are for the most part subjective assessments. But, they do provided guidance regarding each part of the assessment in an attempt to minimise the associated bias.
3. Lack of linkage between actions and impacts: Management actions need to be explicitly linked to predicted and actual outcomes, however this correlation is often missing in reporting approaches. There may be a simple lack of documentation and explanation of the theoretical and conceptual models that underpin the management plan, or it may be that this issue has not been thought through at all, and hence exposes a major weakness in the approach.

4. Loss of information on composite/averaged scores: Composite and averaged scores, such as are used in the World Bank/WWF scorecard for assessing management effectiveness of protected areas and The Nature Conservancy scorecards, may lose information relating to individual components of the composite score. However, they are useful for providing an overall ranking of a site or project, and for easy comparisons between sites and projects. Given the loss of information associated with this method, they should be used with care.

The WCPA Evaluation Framework

The World Commission on Protected Areas (WCPA) Evaluation Framework for Assessing Management Effectiveness of Protected Areas was developed in response to the need for a standard approach to monitoring and evaluation. It provides a generic overall approach within which specific evaluation methodologies can be designed and implemented to suit the particular organisation or program's needs. The framework provides a structure and process for designing management effectiveness evaluation systems, and identifies the components within the management process that should be evaluated. It also suggests some possible indicators that can be used for each of the components. Consequently, we recommend it be used as a framework for developing systems for biodiversity outcomes reporting in Australia.

The WCPA framework is based on the premise that management effectiveness involves three principal issues: (1) design, (2) appropriateness of management systems and process, and (3) delivery of protected area objectives. The framework is based upon these three components being divided into six 'management elements' or components; based on the premise that the process of management starts with establishing goals and objectives within the context of existing land status and pressures acting upon biodiversity (context); progresses through a stage in which actions are planned (planning) and resources allocated (inputs); followed by the implementation of actions (processes); and as a result of the actions produces goods and services (outputs) which are then assessed relative to the goals and objectives (outcomes). Full details of what is included within each of these components can be found in Hockings et al. (2000). The full WCPA Framework monitors and evaluates the effectiveness of management at every stage, or element, of the management cycle (Table 4).

Table 4: WCPA Framework for assessing management effectiveness of protected areas and protected areas systems

Element of evaluation	Explanation	Assessed criteria	Focus of evaluation
1. Context: Where are we now?	Assessment of importance, threats, and policy environment	Significance, threats, vulnerability, national context	Status
2. Planning: Where do we want to be?	Assessment of protected area design and planning	Protected area legislation and policy, PA system design, reserve design, management planning	Appropriateness
3. Input: What do we need?	Assessment of resources needed to carry out management	Resourcing of agency, resourcing of site, partners	Resources
4. Process: How do we go about it?	Assessment of the way management is conducted	Suitability of management processes	Efficiency and appropriateness
5. Output: What were the results?	Assessment of the implementation of management programs and actions, delivery of products, and services	Results of management actions, services, and products	Effectiveness
6. Outcome: What did we achieve?	Assessment of the outcomes and the extent to which they achieved objectives	Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

While advocating the use of the full framework (ie evaluation of all elements) on the basis that each element is a complementary rather than an alternative approach, it is flexible in that it allows a subset of elements to be evaluated depending upon the particular need and available resources specific to the organisation or project. Organisations doing a partial evaluation using a subset of elements tend to do so at one of three levels, which correspond approximately to the three principal management effectiveness issues (Figure 3).

Level 1: Design issues

Level 2: Appropriateness of management systems and processes

Level 3: Delivery of protected area objectives

Level 1 focuses on design issues associated with the context, planning, input and process elements of management, and generally requires little or no additional data collection. It may also include a very basic level of output assessment. Level 2 combines the approach of Level 1 with restricted additional monitoring of outputs and outcomes of management. The final level, Level 3, emphasises monitoring the extent of achievement of management objectives by focusing on outputs and outcomes while retaining measures of management context, planning, inputs, and processes. Level 3 assessments are directed mainly at the site level.

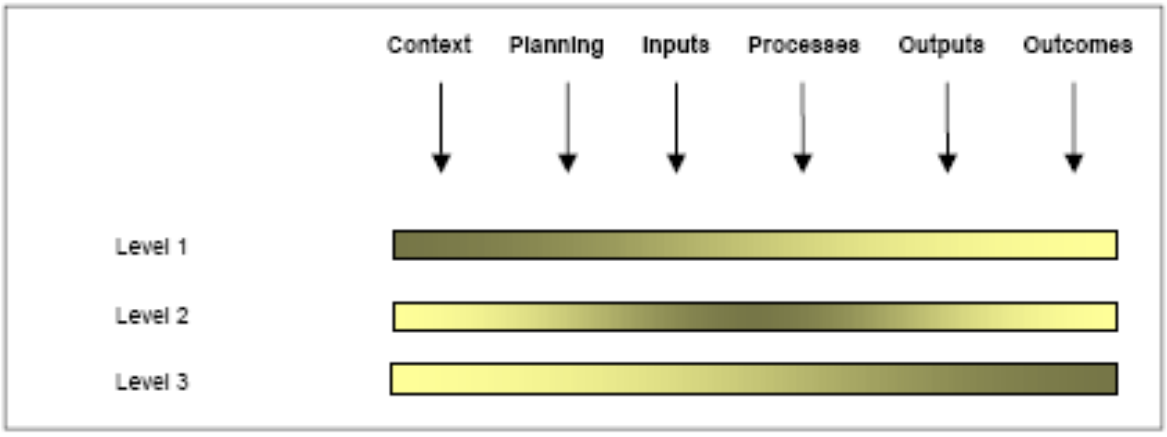

Figure 3: Levels of monitoring and evaluation (Hockings *et al.* 2002)

While partial evaluations are possible within the framework, the Level 3 (outcome evaluation) is argued to the true test of management effectiveness (Hockings *et al.* 2002). By focusing on the outcome element, the previous elements (context, planning, inputs, processes and outputs) can be circumvented to some extent; where only if the outcome is not being achieved are the earlier stages examined to see where the problem lies.

The WCPA Evaluation Framework is increasingly being used in the conservation sector, both internationally and within Australia. It has provided the basis for detailed monitoring at the site level to rapid assessments of protected area systems. Users of the framework include WWF International Rapid Assessment and Prioritisation of Protected Areas Methodology (WWF 2001) and IUCN/WWF Forest Innovations Project (Stolton et al. 2001), and it is also currently being used by UNF/IUCN/UNESCO in a pilot project to develop a system of assessing the management effectiveness of World Heritage sites. The Fraser Island World Heritage Site Monitoring and Evaluation Program in Australia also used an early version of the WCPA Framework (Hockings and Hobson 2000).

Key Findings and Recommendations: Measuring and Evaluating Conservation Success

Based on the above review, the following recommendations are made for developing a monitoring and evaluation approach suitable for the Increment Project.

1. Goals and objectives should be set at the program level and at the property level. The objectives should be SMART (Specific, Measurable, Achievable, Realistic, and Time-specific) and based on outcomes rather than actions.

Potential application for Bush Heritage: An ultimate goal for the Bush Heritage organisation has been set: "To preserve Australia's biodiversity by protecting the bush". Objectives have also been set for the program: 1) maintaining functionally integrated communities and 2) the essential ecological processes they mediate, 3) increasing population viability through maintaining high carrying capacity habitat of priority species, and 4) controlling the influence of other interacting species (including pests) on the actual carrying capacity achieved. Similar but more specific goals and objectives have been set for each Bush Heritage property, detailed in the plans of management.

2. Targets should be utilised for each objective, as a means of quantifying success. These targets should be formulated on baseline data to ensure they are realistic and achievable.

Potential application for Bush Heritage: An organisational target has been set, namely to 'own, or contribute to others conservation management of 1% of Australia (approximately 7 700 000 hectares of land) by 2025. This target is action/response based, and as such does not directly link to the program objectives. As such it is recommended that targets are set for each of the program objectives.

3. Goals, objectives, and targets should be made clear to all stakeholders to reduce confusion and misconceptions about the organisation's aims and expectations.

Potential application for Bush Heritage: The ultimate organisational goal and target are communicated to stakeholders via the Bush Heritage web page. However, program objectives and property level objectives are not currently referred to, and should be incorporated into the web page and/or other methods of stakeholder contact.

4. The monitoring and evaluation system should use the Pressure-State-Response (PSR) conceptual model as the basis for strong program logic. This can then be further refined using the generic results chain with the addition of context as specified in the WCPA Framework (context-inputs-actions-outputs-outcomes), in which the causal links between components are made clear.

Potential application for Bush Heritage: The PSR model is likely to be implicitly used by Bush Heritage reserve managers, ecologists and management planners (i.e. management actions are a response to problems at each property), however it would be beneficial to explicitly document the causal links between the pressure, responses to the pressure, and the resulting state of the biodiversity component. This can be done broadly with the PSR model, or in more detail using the results chain.

5. The immediate evaluation focus should be on the outcome component in order to demonstrate the impacts of strategic management actions. As such, monitoring will involve the collection of biological data as the principal data type corresponding to outcome evaluation for biodiversity conservation.

Potential application for Bush Heritage: The 'Outcomes Monitoring on Bush Heritage Reserves' system currently measures high level indicators for biological outcomes relating to each of the organisational and property level objectives.

6. In order to demonstrate causality (of management actions on outcomes), all management actions should be documented and used as explanatory variables in the evaluation of outcomes. (Note that this does not involve the evaluation of actions/outputs, merely their quantification.)

Potential application for Bush Heritage: Management actions are currently being documented by reserve managers. A central system for documenting actions which allows whole-of-organisation access would be useful, and should be further investigated.

7. In order to obtain the full benefits of a monitoring and evaluation system, evaluations should include evaluation of indirect (output) measures of success in order to provide success contextualisation and to better inform adaptive management. This will necessitate the collection of social and economic data types in addition to biological data.

Potential application for Bush Heritage: Bush Heritage will need to increase documentation of the context, planning, and inputs, and ensure that documentation of actions/processes and outputs are continued. The elements that need to be documented within these components is detailed within the WCPA framework, and can be applied to Bush Heritage's specific situation in a collaborative workshop situation with Bush Heritage staff, reserve managers, ecologists and external specialists. These components will then have the necessary data available in order to be evaluated at some point in the near future when the necessary funding, knowledge and time are available.

8. Monitoring should begin before any management actions commence and continue after the actions have finished. In terms of land acquisition as a management action, monitoring may not be possible until the land has been bought (and consequently de-stocked), in which case monitoring should begin as soon as possible after the land is bought. Monitoring should continue into the future so that lag-time responses are captured.

Potential application for Bush Heritage: A number of Bush Heritage properties were acquired before the 'Outcomes Monitoring on Bush Heritage Reserves' system was put in place, and consequently these reserves will not have a true set of baseline data (i.e. data regarding the status of biodiversity before management actions took place). Monitoring should begin on these properties as soon as possible (as is occurring) and this factor taken into account during data analysis.
Monitoring is continuing into the future so that lag-time responses will be captured by the long-term nature of the monitoring.

9. The spatial extent of monitoring should include the full zone of impact of the management actions at the property level. In terms of organisational levels, the reporting system should allow the calculation and evaluation of overall program/organisational success relative to program level objectives, presumably as the cumulative total of the outcomes of each constituent property.

Potential application for Bush Heritage: The full zone of impact of the management actions at the property level are adequately encompassed within the Bush Heritage Outcomes Monitoring program. The data collected from this program is not currently being used to assess achievement at the national/organisational scale, so the opportunity exists for

statistically aggregating property level data up to the national scale, or alternatively for putting in place new measures of outcome success at this level.

10. Evaluation of success should be of outcomes relative to property and program objectives and targets.

Potential application for Bush Heritage: As targets are not being used to their full potential by Bush Heritage at this time, success is currently being evaluated as outcomes relative to objectives. This is an appropriate interim method, however targets as discussed previously are a useful tool and their use would be of benefit to the organisation.

11. External audits are beneficial in increasing stakeholder trust and confidence in the results of evaluation, as well as providing useful information for adaptive management, and should be incorporated as a periodic element of the evaluation system. Due to funding restraints, external audits should be conducted approximately once every 5-10 years.

Potential application for Bush Heritage: The evaluations are currently being conducted by Bush Heritage ecologists, and the data collection is aided by Reserve Managers. Once the monitoring and evaluation system is in place, external audits of the performance of the organisation should be taken up.

12. The WCPA Evaluation Framework should be used as the basis for developing a monitoring and evaluation approach.

Potential application for Bush Heritage: This framework is the only one that allows the implementation of all of the above recommendations. It is flexible enough to allow the staggered implementation of a comprehensive monitoring and evaluation system, and also allows organisational and site-specific methodologies to be developed within the generic approach. It has been successfully used by international conservation organisations, and hence the standard approach can be used to facilitate comparison and learning between organisations.

The above recommendations are incorporated into Table 5 which uses the categories used to analyse previous approaches and which shows the incremental nature of the framework monitoring and evaluation system implementation.

Table 5: Recommended Bush Heritage Increment Evaluation Framework

Approach Type		Purpose	Overview	Scale		Measures Effects Y (Yes)/ N (No)	Measures Effectiveness Y (Yes)/ N (No)	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)
				Spatial (organisational)	Temporal						
Recommended Bush Heritage Increment Framework	Immediate	AA	Aims to provide greater accountability to supporters by reporting information on conservation outcomes from management actions.	Site	Ongoing	Y	Y	SR	Outcomes	B	I
	Future	EA		Site and property	Ongoing	Y	Y	PSR	Context Planning Inputs Process Outputs	BSP	I & E
Bush Heritage Current Outcomes Monitoring Program		AA	Aims to provide sensible indicators as surrogates for key outcomes.	Site	Ongoing	Y	?	S	Outcomes (Outputs?)	B	I
WCPA Framework for Assessing Management Effectiveness of Protected Areas		EA	An evaluation framework to provide a consistent overall approach (structure and process) to assessing management effectiveness	Multiple: site, network, landscape level	Multiple	Y	Y	PSR	Context Planning Inputs Process Outputs Outcomes	BSP	NS

COMMUNICATING CONSERVATION SUCCESS TO STAKEHOLDERS

Following the measurement and evaluation of conservation success, the second critical component of reporting on conservation success is the presentation and dissemination of information to relevant stakeholders and interest groups. Reporting can be defined as the documenting of results of monitoring activities and evaluations, and presentation of these results to inform others about the project achievements (Australian Government Envirofund 2006). In contrast to the extensive research conducted on assessing conservation success, there is a relative paucity of research on methods for communicating the results of conservation assessment; in particular, the challenge of translating scientific data into information which is understandable and appropriate to the requirements of the particular stakeholder. Given that the results gained from measuring and evaluating performance may be quite extensive and detailed, there are significant challenges in meeting the specific information requirements and preferences of different stakeholders. As noted by Ritchie and Lewis (2003), the reporting task is not simply an act of recording the outcomes of the analysis, but involves an 'active construction and representation of the form and nature of the phenomena being explored'.

Effective communication of the results of monitoring and evaluation is an important component of a reporting approach, regardless of the purpose for which the evaluation was conducted. Effective communication is necessary in order for donor-based conservation organisations to gain continued support from donors and to secure new donors, to meet requirements tied to funding (particularly for government grants), to provide information that is useful to a range of conservation-oriented organisations, and to maximise internal knowledge and learning from the outcomes.

The relative importance of communicating conservation success to stakeholders may vary depending upon the purpose of the assessment, and the nature of the organisation. For organisations that conduct evaluations in order to provide accountability to stakeholders, communicating information effectively is a major component of the reporting procedure. This is an important consideration for organisations such as corporations conducting Impact Assessments to gain government approval for development, or state government departments conducting 'State of the Parks' assessments to comply with National Government regulations, Organisations which are dependent upon stakeholder support for their continued functioning, such as donor based conservation organisations (like ABHF, WWF, TNC, and ACF) also tend to place a high importance on communication strategies in comparison to those for whom stakeholder support is not such a key factor.

Identification of Stakeholder Information Needs

The information requirements of stakeholders in terms of the type and presentation of the information being reported need to be identified in order to effectively communicate the results of outcome evaluations. It is necessary to identify and engage with relevant stakeholder groups early in the life of the program to ensure the information gained from the monitoring program is adequate, useful, relevant to their needs, and easy to understand (Zammit et al. 2000; Diamond and Liddle 2005). Identifying stakeholder information requirements generally involves some method of interaction between program staff and stakeholders. Different stakeholder groups may

require different sorts of information, as well as different presentation formats of the information (Sheppard and Meitner 2005). Consequently, a first task is to identify all the relevant stakeholders, both internal (within organisation) and external (outside the organisation), and identify broad groupings based on shared information requirements.

The information needs of a stakeholder group can be assessed in terms of two broad categories: (1) information content (what is actually being reported, which may include the level of detail of the information); and (2) information presentation (the method of presentation, which includes the level or characteristics of the style, length, frequency of reporting, and method of delivery of the reporting). The information requirements of some stakeholder groups are relatively well understood and defined. Government departments that require feedback on conservation success from funding recipients will often have set criteria which need to be addressed, such as the list of "standard outputs and measures" for Australian Government Envirofund projects (Australian Government Envirofund 2006). In contrast, the non-government, individual or family funders of donor-based conservation organisations tend to have more varied needs which are generally not as well defined or understood (Stoll-Kleeman and Welp 2006).

Government Funding Bodies Accountability Requirements

Bush Heritage and other similar conservation organisations often receive a proportion of their funds from government grants such as the Natural Heritage Trust (NHT), Australian Government Envirofund, and the National Reserve System (NRS), and as such government departments can be considered as an important stakeholder group. Funding is often tied to set requirements in the form of accountability reports. These reports generally must follow a set protocol as articulated by the particular government department. For example, the National Investment Stream of the NHT. Evaluation and reporting on the achievements of the National Investment Stream of the NHT occurs at two levels: the whole investment stream, and the individual (component) projects. Individual projects must report biannually on inputs, outputs, and outcomes, for example:

- Investment (e.g. funds expended, contracts signed)
- Output (e.g. recovery plan produced, database created)
- Intermediate Outcome (e.g. documented land use change, development of industry partnerships to promote industries' responsibility for NRM)
- Outcome (e.g. significant reduction of seabirds killed in longline fisheries; attainment of agreed water quality pollution load targets)

In contrast, reporting on the whole investment stream focuses solely on outputs, for example:

- funds expended
- number of approved projects
- % projects meeting or exceeding expected milestones
- project outputs grouped by national investment stream priority outcomes
- projects grouped by the four Care programs.

The NRS and Envirofund have similar requirements. Envirofund projects are measured in terms of the on-ground results of the projects or the improvement in community or individual knowledge and skills - these can be described as the products and services delivered by the

projects (outputs); and the change in the community's or individual's skills and experience brought about by doing the projects (secondary output). More specifically, the standard outputs are divided into four categories:

1. Resource assessment outputs: activities that conduct studies and investigations
2. Planning outputs: activities that develop plans and guidelines
3. Capacity building outputs: activities that develop people's skills and provide information material such as newsletters and brochures
4. On-ground works outputs: activities that carry out works that fix environmental problems or improve environmental conditions

At a smaller scale, regional NRM bodies (CMA's, regions etc.) provide funding for community groups such as Landcare and hence can also be considered as an information stakeholder with reporting/accountability needs. CMAs are a vehicle for allocating state and federal government funding (from sources such as NAP, AG Envirofund, Regional NHT, Second Generation Landcare, and the National Landcare Program) to community groups. Once again, these stakeholders are quite explicit with respect to their requirements, which tend to be focused on 'on-ground outputs' such as:

- Stock grazing: Area/distance of terrestrial remnant vegetation fenced from stock, area/distance of stream/river remnants fenced
- Weed invasion: area of woody weed management, percentage of landholders complying with requirements under CALP Act in targeted areas
- Pest animals: area of high priority rabbit infested land that are covered by control programs in terms of area treated and area controlled
- Habitat loss – terrestrial: area of revegetation of natives within or next to remnants
- Habitat loss – threatened species: number of Threatened Species Recovery Plan and Action Statement Implementation.

They also request outputs such as capacity building actions.

- Capacity building actions: number of Whole Farm Plans, number of community education, awareness and communications projects/actions, number of Landcare support groups, number of monitoring, evaluation and reporting activities, amount of Local Government involvement, and number of research and development/investigations projects.

Government stakeholder reporting requirements currently reflect the traditional focus on outputs. However, given the current gradual shift to outcome reporting the needs of many government organisations are less well defined.

Non-government Donor Accountability Requirements

In contrast to the well-defined reporting requirements of government bodies, non-government bodies tend to be less forthcoming in expressing their needs, which is further complicated by the variety of stakeholder groups. Ideally, donor information requirements should be ascertained first hand; due to the degree of specificity of the objectives, methods, and

information relating to individual programs, as well as differences in the stakeholder groups. Surveys (either electronic, paper, phone, focus group workshops or one-on-one) are the most common method of engaging with stakeholders. Although the information obtained from the interviews must be used with care because the sample size is typically small (and other inherent problems associated with analysis of survey information), it can provide useful and valid information on stakeholder requirements (Stoll-Kleeman and Welp 2006). The results of interview can also usefully engender a feeling of 'ownership' of and inclusion in the project by the donors. Some authors even argue that stakeholder groups should be included not only as a 'sample' in the formulation and implementation of reporting approaches, but as an active 'collaborator' (e.g. Zammit *et al.* 2000).

Review of Current Methods for Communicating to Non-government Investors

The communication methods of several non-profit organisations were analysed in order to ascertain their approach to the above issues associated with reporting. These organisations are similar to Bush Heritage in their purpose, goals, and to a lesser extent their methods. However, the focus here is not on the particular information being communicated. Rather, the analysis centres on the characteristics of the communication approach; including level of detail, length, frequency of reporting, style, content, incorporation of flexibility, and method of delivery. The organisations used as case studies were: WWF Australia; Earth Sanctuaries Limited; Jane Goodall Institute Sanctuaries for Orphaned Chimpanzees; The Nature Conservancy; Australian Conservation Foundation; Conservation International; The Nature Foundation South Australia; Australian Wildlife Conservancy. The sources of information used in this review included web site material, annual reports, newsletters, and email bulletins from each of the organisations. That is, the information was used that a stakeholder (in this case either a donor or shareholder) could expect to receive from the organisation. A table of the organisations examined and their communication approaches is included below (Table 6).

Table 6: Communication Characteristics of Donor-based Conservation Organisations

Organisation (and references)	Primary Information Delivery Method	Frequency of Reporting	Style (text, photos, maps, as an approximate % of the total report content)	Content: What is being reported			Quantitative or Qualitative Information	Level of Detail	Average Length of Report (Conservation Success component)	Other Communication Media Used By Organisation
				Type of Information (Biological, Social)	Scope of Information (Pressure, State, Response)	Reporting on Outcomes (Y/N)				
WWF Australia (WWF-Australia 2003; WWF-Australia 2004; WWF-Australia 2005)	Annual report	Annual	Photos 33% Text 66%	Biological and social (policy, education, funding)	Response (most reporting is based on what WWFA has done, but no mention of the impact its actions have had on Australia's biodiversity).	Y (minimal, mostly outputs)	Mixture of qualitative and quantitative	Detail on key points	4-12 pages	Tri-annual supporter magazine "Living Planet", monthly email bulletin "Futuremakers", website
Earth Sanctuaries Limited (ESL) (ESL 2000; ESL 2001; ESL 2004)	Annual report	Annual	Photos 33% Text 66%	Biological	State (context), Pressure, Response	Y (however objectives, and hence outcome evaluation, are action/output focused, rather than state focused – ie the outcomes are essentially outputs).	Qualitative (S, P), and quantitative (R)	Summary	1-5 pages	Quarterly newsletter "Earth News", open days at ESL properties, website
Jane Goodall Institute (JGI) Sanctuaries for Orphan Chimpanzees (JGI 2004)	Annual report	Annual	Photos 33% Text 66%	Biological and social (community awareness)	Pressure, response, state	Y	Qualitative	Summary	Sanctuary report 2 pages (entire conservation report 20 pages)	Website
The Nature Conservancy (TNC) (TNC 2003; TNC 2004; TNC 2005)	Annual report	Annual	Photos 50% Text 50%	Biological and social	Pressure, response, state	N	Qualitative	Summary	Project reporting: 32 pages	Two quarterly magazines called "Nature Conservation" and "Landmarks", monthly email bulletins, website
Australian Conservation Foundation (ACF) (ACF 2005)	Annual Report	Annual	Photos 33-50% Text 50-66%	Biological and social	Pressure, response, (minimal state)	N	Qualitative but grounded on one or two fundamental quantitative facts	Some detail on key points	16 pages	Supporter magazine "Habitat", website
Conservation International (CI) (CI 2005)	Annual report	Annual	Photos 30% Text 60% Maps 10%	Biological and social	Pressure, Response	N	Qualitative	Summary (many small summaries of many projects).	10-15 pages	Quarterly newsletter "Conservation Frontlines", monthly email newsletter "eNews Update"
The Nature Foundation SA	Newsletter	Quarterly	Photos 33% Text 66%	Social predominantly, biological (but not really related to lands owned and managed)	None	N	Qualitative	Some detail on 5 or 6 stories	8 pages	Website
Australian Wildlife Conservancy (AWC)	Annual report	Annual	Photos 33% Maps 33% Text 33%	Biological	Pressure, response, state	Y (land acquisition) N (management)	Qualitative and quantitative	Summary	4 pages	Tri-annual newsletter "Wildlife Matters", monthly electronic bulletin updates

Qualitative and Quantitative Data

The annual reports of all the organisations examined used qualitative information to communicate with readers. These qualitative data for the most part were grounded on one or two quantitative facts, generally in the format in which the pressure is stated quantitatively or semi-quantitatively, and the response to this pressure is summarised qualitatively. For example, in ACF's 2005 report regarding Australian land clearing laws, the threat is stated as: "Land clearing rates in Australia remain extraordinarily high. The most recent assessment of land cover change in Queensland shows that around one million hectares of land was cleared in that state between 2001-2003." The response by ACF to this pressure was qualitative: "ACF acted swiftly in response…. and issued a combined statement with other conservation groups calling for greater investment, not deregulation." Similarly, WWF-Australia in its 2005 Annual Report: "In the Arafura Sea, home to six of the world's seven species of marine turtles, marine debris remains a prominent cause of mortality, particularly to threatened and protected species such as turtles, dugong, dolphins and whales" (semi-quantitative threat). "In 2004/05, WWF – in partnership with Aboriginal communities and Indigenous Sea Rangers – has continued its vital marine tracking program, particularly in relation to derelict fishing nets" (qualitative summary of response).

The use of qualitative information is a technique used to render conservation information more interesting to stakeholders. Often the information is conveyed using a 'story-telling' style, in which key points are told via a narrative. For example, demonstrating a point through an event that occurred, a particular animal, or a personal experience. The story-telling style is inclusive, in that it is more personal and can be more readily related to by readers. This style is clearly demonstrated by The Nature Conservancy (TNC). TNC uses accounts by people (non-TNC staff) connected to the particular project to convey information about pressure and response. In 2005, in a report of TNC's work in Kimbe Bay (PNG), a local talked about the effects of over-fishing on his island, and his involvement in the conservation work: "I saw that the tree was gone. The fish were no longer there. We called out to the dolphins, but there was nothing. […] I asked how we could help, and [TNC] replied, "We want you to work with us so we can realize our dream of bringing back the corals and fish." This is then supplemented by a short summary of the work written by a staff member.

Information Style

The most common styles of information presentation among the conservation organisations were text and photos, generally combined in an even ratio or with slightly more text than photos. Photographs of landscapes, plants and faunal species were combined with text in a ratio varying from approximately 1:2 – 1:1. This choice of style may reflect the 'type' of stakeholders that are the recipients of the information; generally non-scientists. Eye-catching, emotive photographs to capture attention and interest, backed-up by text which is easy to read and understand, appears to be the most common method for explaining and reporting on performance. There was either very limited or no use of statistical outputs such as graphs, charts, and statistical (numeric) results. There are a number of possible reasons for the lack of numerical results in providing information on conservation success, including (but not limited to) the preferences of the stakeholders and a lack of numerical data from many M&E programs.

Whatever the reason, there is a distinct lack of quantitative (numeric, statistical) output used by conservation organisations in communicating biodiversity performance to investment stakeholders.

Even more conspicuous is the lack of clear statements of goals and objectives, and there is often no clear linkage between the response (action taken) and its impact on state (outcome). While the need for such statements and linkages has been prevalent in much of the literature regarding measures of biodiversity conservation success, any uptake of this seems to be largely for internal program use only (e.g. for adaptive management as opposed to knowledge dissemination).

Type of Information: Biological and Social

The information type used by the organisations was dominantly biological and social. The social information was in two forms: (1) social outputs; and (2) information included purely as human interest. Social outputs included policy alteration or development, funding of conservation activities, campaigning for conservation, raising awareness and education levels of stakeholders, forming strategic partnerships and alliances, and increasing volunteer numbers. For example: " With support from the Mulago, Swift, and MSST foundations, CI launched the Conservation Stewards Program to empower and provide incentives for private landowners, community groups, and indigenous peoples to conserve their lands" (CI AR 2005). Similarly: "The threat posed to Australian native species by invasive weeds and feral animals continues to escalate. […] This year, WWF has been instrumental in convincing the Australian Government to commit $40 million to combat the growing weeds problem and elevate the threat of invasive species to the status of a national conservation priority" (WWF-A AR 2005). The predominance of social information being reported by conservation organisations is related to the type of work they do – many organisations concentrate not only on land acquisition and management, but also (or instead) on 'social' methods for conservation such as campaigning and education. However, even organisations that focus more strongly on biological methods (land acquisition and management) make use of social information. For example ESL: "Warrawong [sanctuary] supported the local community during the year with sponsorships of many clubs and schools, utilising preferred local suppliers and supporting fund-raising initiatives of local community groups." And "Total tourism numbers at Scotia have increased again this year and are expected to increase further with target marketing features" (ESL 2000).

Scope of Information: Pressure, State, Response

While most of the programs report on pressure and response, many of them do not explicitly explain why or how the method of response will regulate or alleviate the pressure, and how this will impact on state; e.g. "18km of safety buffer fence was erected as part of a project to surround the perimeter of the four vermin-proof fenced stages of Scotia. This buffer fence will add extra protection for native wildlife by preventing vermin from entering" (ESL AR 2000). And "[WWF's] Shorebirds Program has this year continued to address the increasing threats to shorebird habitat posed by pollution, altered waterflows, hunting, recreation activities and introduced predators. […] Through infrastructure such as fencing, shelters, protected trails as well as surveys [...] WWF is laying the foundations for the long-term health of shorebirds." The lack of

reporting on state variables may be due to a lack of measuring or monitoring of environmental state. For some programs, particularly those that are international, the large scale of their operation may prohibit implementing quantitative monitoring programs.

While the length of the performance reports varied considerably between organisations, the level of detail remained similarly low: the longer reports were due to more projects being reported rather than an increase in detail.

Dichotomy between Assessing and Communicating Performance

While many prominent conservation organisations communicate information about responses (in the form of outputs) for the bulk of their stakeholder reporting, there appears to be a dichotomy between what is actually assessed within the organisation as part of their monitoring and evaluation system, and what is communicated to the stakeholders. For example, TNC uses a relatively sophisticated method of monitoring and evaluating its performance called the 'Enhanced 5-S Project Management Process' (summarised in Table 3). However, the results of this process are not reported to stakeholders in their annual report, which is their key reporting media. Instead these results appear to be for internal use only. The majority of both TNC's annual reports and quarterly magazines are given to reporting on specific projects. The amount of text is minimal and more human-interest than science-based; often written by a non-TNC staff member, with a short overview of project details given at the end. The majority of the space is taken up by photographic images. Conservation International and its 'Rapid Assessment Program' and 'Outcome Monitoring Protocols' is a similar example of this dichotomy. This may be reflect of (1) stakeholder information requirements, or perception thereof, or (2) the size of the organisation and hence a restriction on the amount of information to be conveyed.

Key Findings: Communicating Conservation Success

We conclude the following from our review.

1. The approach taken by donor-based conservation NGOs to communication of conservation success is relatively similar. There is limited communication of quantitative, outcome based information. Even where detailed outcome monitoring and evaluation systems are being conducted, the reporting style is kept simple and tends to be in the form of a narrative or series of short dot points. There is a need for an approach which promotes reporting on conservation outcomes in a more quantitative manner.
2. The communication of conservation outcomes needs to be better tailored to the information requirements and preferences of stakeholders. This may involve reporting different aspects or levels of detail to different stakeholder 'groups'. The information communicated should reflect the strategic assessment behind the results. Such 'communication tailoring' will usually require a stakeholder consultation to ascertain requirements of individuals or groups.

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CHAPTER 2

A CONCEPTUAL FRAMEWORK FOR MONITORING, EVALUATING, AND REPORTING ON BIODIVERSITY CONSERVATION OUTCOMES

Brendan Mackey and Eleanor Sobey

Effective reporting on biodiversity conservation outcomes requires an appropriate conceptual framework to help organise and coordinate the various necessary programme elements. Such a framework must build upon existing knowledge and experiences, together with current and proposed monitoring and evaluation projects. We present here a conceptual framework for reporting on biodiversity conservation outcomes that links programme logic with ecological theory. The conceptual framework is illustrated using Bush Heritage conservation goals as a case study.

Definitions

A number of terms are frequently used to describe the practice and theory of monitoring, evaluation, and reporting (MER). Consequently, it is useful to clarify their meaning to avoid misinterpretation. The definitions given here are consistent with those provided in the literature review; being either based on the most commonly used definition of a term, or derived from several existing definitions.

Objective: a statement of what a programme is intended to achieve. This statement should be outcome-oriented as opposed to action or strategy oriented.
Example: To maintain an ecologically effective population of an endangered bird species (as distinct from a strategy-based objective such as: to rehabilitate 10 hectares of land as habitat for the endangered bird species).

Target: quantifiable levels or ranges defining the state or condition of a biodiversity/conservation component. A target is generally associated with a particular objective.
Example: To achieve breeding success of at least 50 fledglings of the endangered bird species individuals per year

Conservation outcome: the impact of actions and outputs relative to the conservation objective or target.
Example: The population of endangered bird species has become more ecologically effective with an increasing trend of more than 50 individuals being fledged each year, due to the revegetation (action) of 10 hectares (output) of habitat in the local area.

Reporting: the documenting of the results of monitoring and evaluation, and the presentation of these results to inform others about the project achievements.

Identification of Conservation Objectives

Reporting on conservation outcomes must be explicitly linked to the specific objectives of a programme as outcomes by definition are relative to the stated objectives. What constitutes an outcome is dependent on the objectives and targets of the programme. The conceptual framework for reporting on conservation outcomes presented in this section has been developed for objectives focused solely on biodiversity conservation. However, the underlying concepts possess a generality which allows the framework to be modified to incorporate social or economic objectives; should these be considered useful or necessary. This point will be illustrated later in the section.

The Australian Bush Heritage Fund (ABHF) was used as a case study to demonstrate the application of the conceptual framework to an existing organisation. As such it was first necessary to identify Bush Heritage's conservation objectives. At an organisational level, the overarching objective is "*on all reserves, to maintain or improve biodiversity at all biological and ecological organisational levels, namely 1) genetic, 2) population, 3) community, and 4) ecosystem*". At a reserve level, this objective is the basis for more reserve-specific objectives which focus on the particular species, populations, communities and ecosystems that are present on the reserve (Gilmore et al. 2006).

Relationship between the Conceptual Framework and the Conservation Management Process

As discussed elsewhere in this report, the conservation management process is often simplified into distinct components. The World Commission on Protected Areas Evaluation Framework (WCPA-EF) is a comprehensive, practical and transferable framework for evaluating management effectiveness. Here we explain how our conceptual framework relates to the six components of the WCPA-EF: (1) context; (2) planning; (3) inputs; (4) process (called 'actions' here for consistency); (5) outputs; and (6) outcomes. These components are defined in Figure 4.

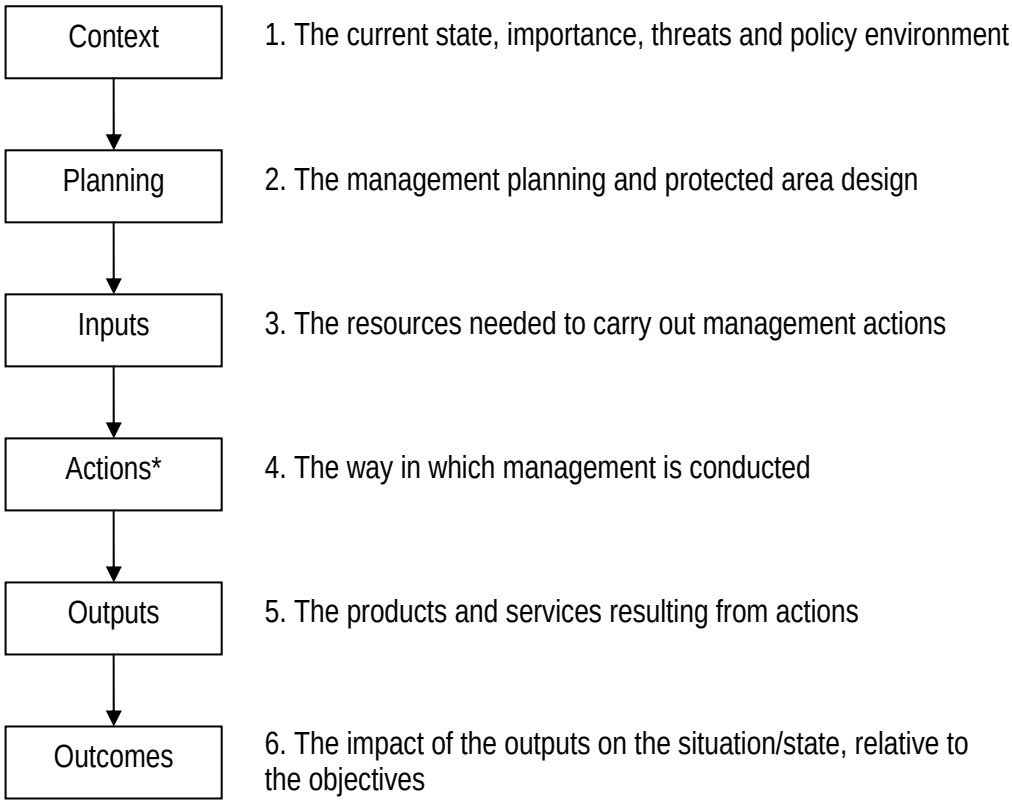

Figure 4: Components of the Management Process. Modified from Hockings (2000) and Treasury Board Secretariat (2001).

(* Used synonymously with the term 'processes' sensu Hockings (2000))

Reporting on conservation outcomes places the focus on the final component of the WCPA framework (#6 'outcomes'). As discussed elsewhere in this report, conventional reporting practices have been dominated by descriptions of inputs, actions and outputs, with relatively little information relating to the impact of these conservation strategies on the objectives (i.e., the outcomes) (Figure 5).

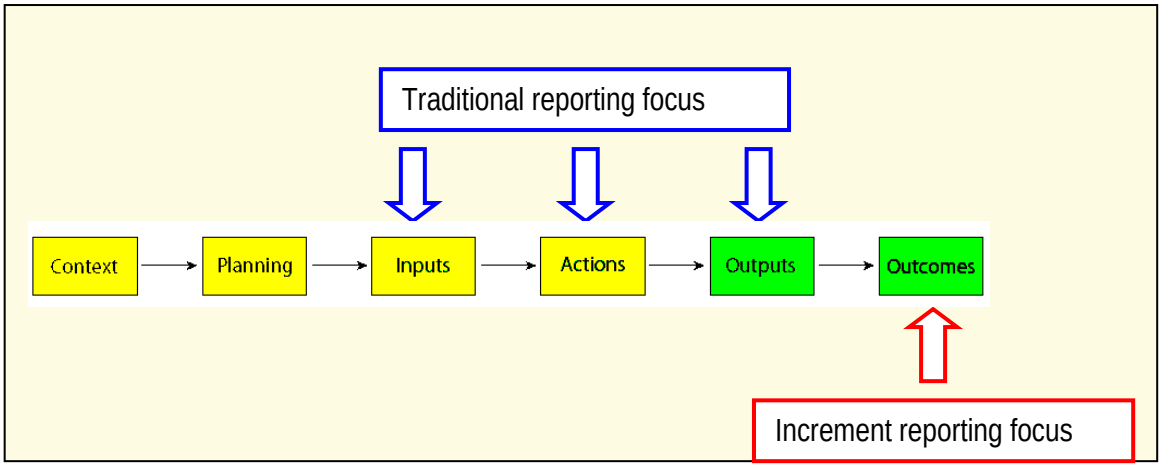

Figure 5: Reporting emphases in terms of components of the management process. Traditional reporting focus is on inputs, actions and outputs. The Increment project aims to give added emphasis to outcomes reporting.

The Use of "expert knowledge" in Outcomes Reporting

The role of expert knowledge in biodiversity outcomes reporting is often questioned. However, in a practical sense it is a necessary source of information to inform the programme logic that underpins and connects the components of the management process. Programme logic refers to the theory and assumptions that lie behind the management process and that are the causal 'links' between each component. It is this underlying theory that drives management strategies. Expert knowledge is often excluded or used implicitly in conservation reporting on the grounds that it does not necessarily have the supporting evidence derived from systematic survey and quantitative analysis based on in situ data. Frequently however, the necessary scientific data are simply not available with which to guide decision makers through the six components of the management process (Figure 1). In their absence the expert knowledge of experienced land managers and scientists can be used to provide the logic that supports management decisions. Even in circumstances where location-specific, data-based scientific knowledge is available, expert knowledge can still be used to support and strengthen the predictions and assumptions underlying and linking each component of the management process. An example of how knowledge can be used to inform the programme logic is given in Figure 6, based on the management plans for a Bush Heritage property called Nardoo Hills Reserve in north-central Victoria.

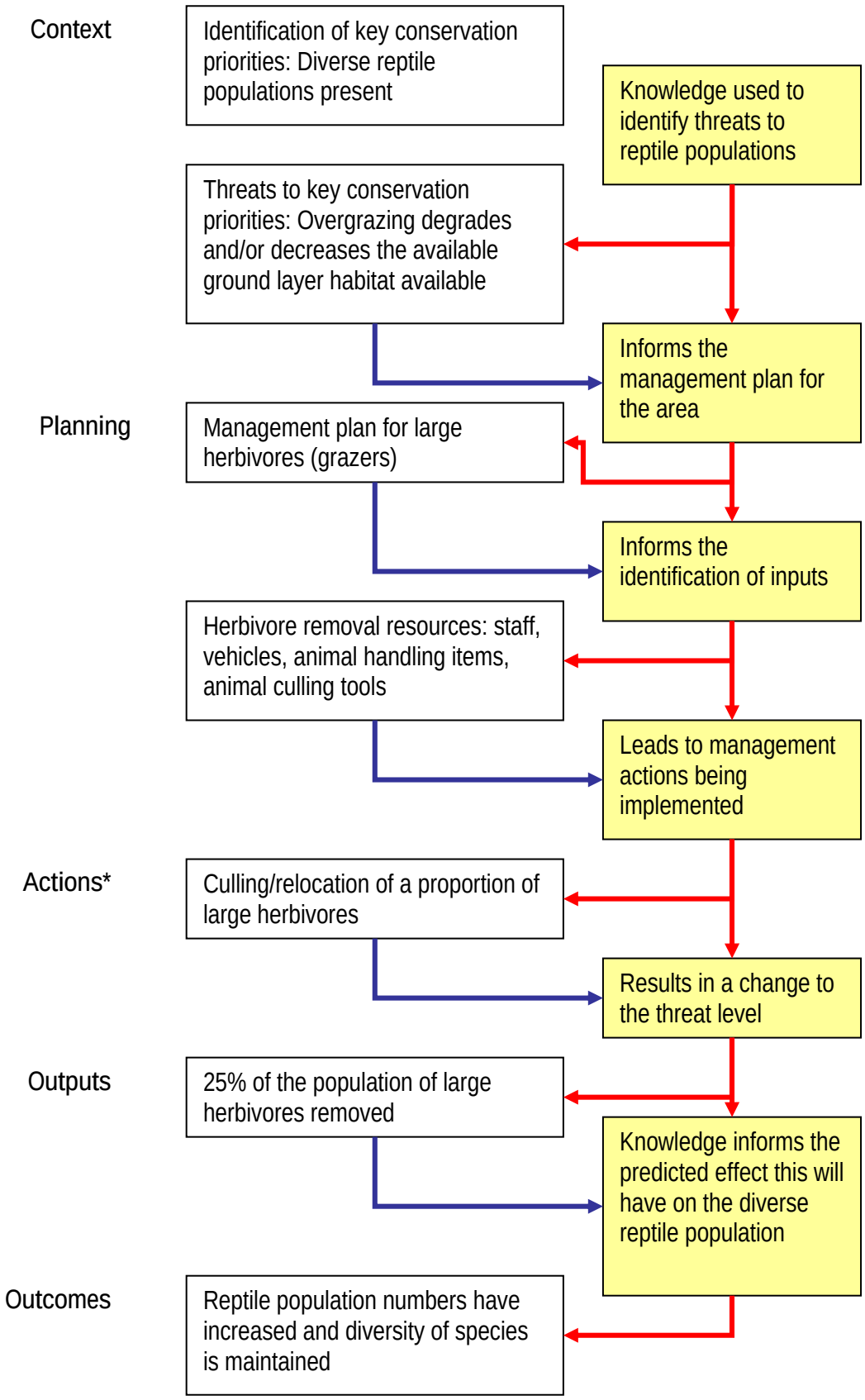

Figure 6: Using expert knowledge to inform the programme logic behind the management process – an example from a Bush Heritage property in north-central Victoria

THE STAIRCASE REPORTING MODEL

The WCPA-EF can be used so that each of the six management components can be evaluated and reported on to gain an understanding of the management effectiveness of the conservation program. However, the cost, time and confidence associated with reporting on each component varies. Shifting from reporting on the first component to the last component (i.e. from context to outcomes) of the management system increases the time and cost involved. This relationship is shown in Figure 7. The different components are represented as grey 'clouds' to denote the overlap that may occur between them.

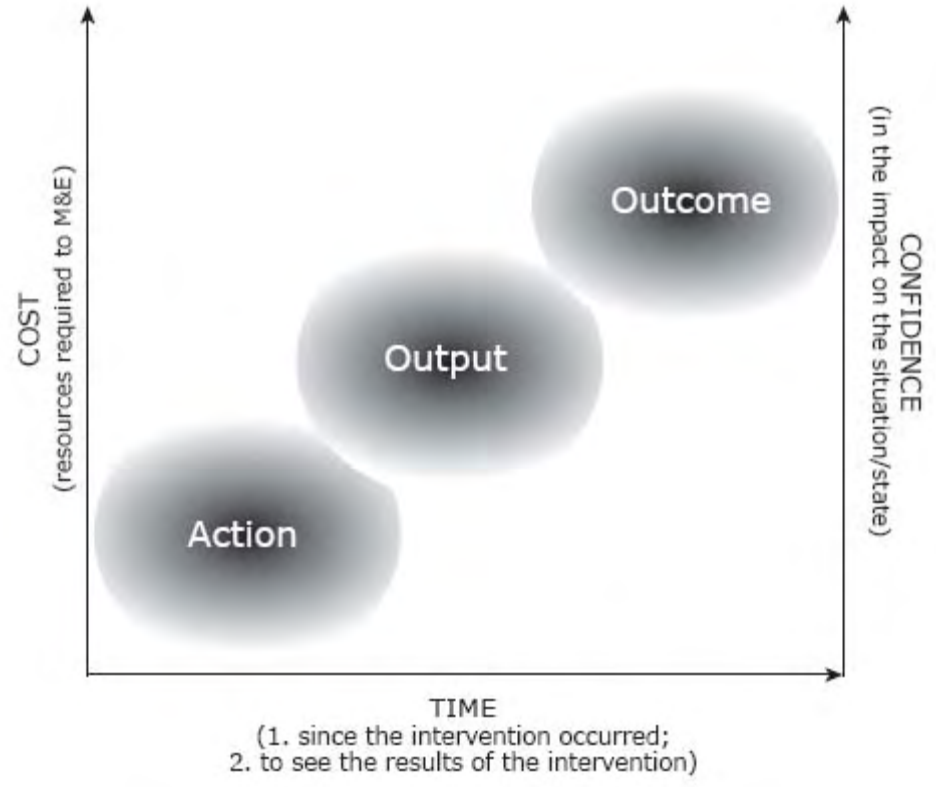

Figure 7: The relationship between time, cost, and confidence in reporting with respect to the components of the management process

The relationship illustrated in Figure 7 is particularly indicative of the final three components: actions; outputs; and outcomes.

Time

The variable 'time' in this sense refers to 1) the time that has elapsed since the management intervention occurred and 2) the time required to observe and measure the results of the intervention. This is intuitively sensible as the management system components are really a simple categorisation of the logical chain of actions that occur when undertaking land management – the situation is assessed, a plan of attack formulated, actions carried out, and the benefits reaped (i.e. the outcomes). Furthermore, associated with most management actions and in turn outputs is a 'lag-time' in which the environment responds to a management action. Depending upon the indicator or feature in question, this lag-time can vary in time-to-respond

from slow (e.g. soil organic matter content) to fast (e.g. populations of ephemeral species). As such, for variable periods after conservation inputs and actions, there may be no response, or a minimal response in terms of environmental variables, and monitoring may be needed for 50 years or more before trends can be measured and reported on.

Cost

The resources required for monitoring, evaluation and reporting – referred to here as the 'cost' – also tend to increase as you shift from actions to outputs to outcomes. These resources may include capital and operational costs, along with significant human resources involving the use of people with specialized knowledge. The positive relationship between cost and management components can be explained in the following manner: reporting on the actions that have taken place – a simple reciting exercise - requires comparatively minimal additional infrastructure, or staff skills and knowledge; reporting on outputs requires the actions to be measured and quantified which involves a larger number of staff (or a greater number of staff hours); finally, reporting on outcomes requires substantially more staff skill and knowledge (for example, selecting appropriate indicators, site selection and stratification, identification and monitoring skills), potentially more staff to carry this out (as well as more staff hours for long-term monitoring), additional infrastructure (such as vehicles, monitoring equipment, GIS software for analysing remotely sensed data), and the associated increased financial cost of these resources.

Confidence

The third variable associated with reporting is the level of confidence that can be placed in the information being reported, with respect to impacts on the situation or state. The level of confidence increases with a shift from indirect measures such as actions and outputs, to a direct measure such as an outcome. For example, using the case study management process at Nardoo Hills Reserve, Victoria: a report on the actions that occurred – culling and relocation of large herbivores – relies on the assumption that these actions will result in appropriate outputs, which in turn will result in positive outcomes to the lizard populations (i.e. the so-called project logic). In contrast, a report on the state of the lizard populations' viability and diversity is a direct measure of the impacts on the objectives, and therefore the level of confidence is maximised.

The positive time and cost relationship accounts to some extent for the traditional emphasis on reporting actions and outputs compared to outcome reporting. However, the positive relationship with confidence levels demonstrates the need for outcomes reporting if accountability is a prime goal.

It is useful to simplify the relationships shown in Figure 4 by visualizing them as a staircase (Figure 8). We call this our staircase reporting model (Figure 8b) with each step indicating a phase shift increase in costs, time, but also confidence.

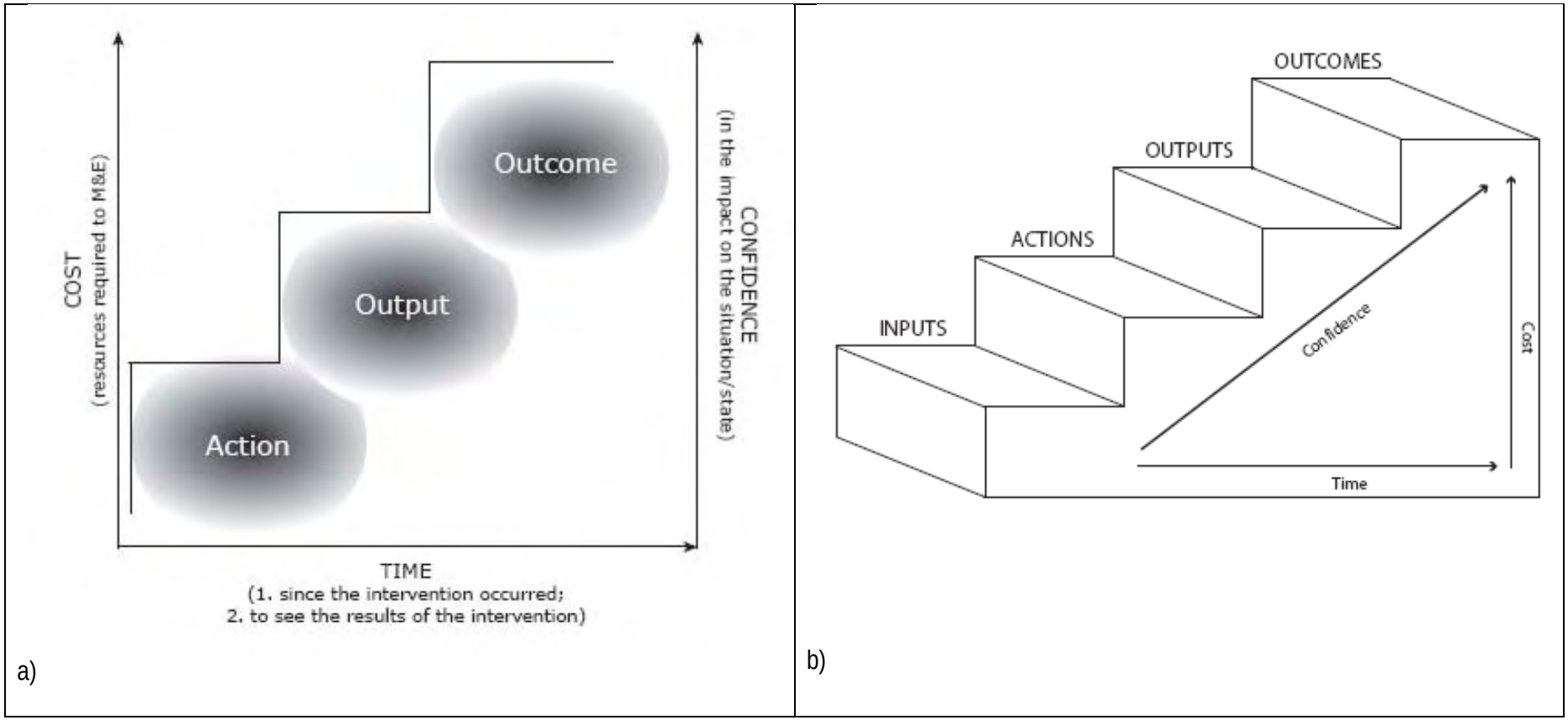

Figure 8: Conceptualising the relationship between time, confidence, and cost of reporting as a staircase model
a) Representing the relationship between time, cost, and confidence in reporting as a staircase relationship
b) The staircase reporting model

Using Different Data Types

What constitutes an outcome is defined by the programme's objectives. This in turn identifies the type of data needed to measure the outcomes. As discussed, the focus here is on biodiversity conservation objectives. The term 'biodiversity' is defined by the Convention on Biological Diversity (to which the Australian Government is a signatory) as "*the diversity found at genetic, species and ecosystem levels*" (CBD 2002). Given this, biodiversity conservation outcomes must be measured using biophysical indicators and data. If a programme such as Bush Heritage chose to report on a social objective, the outcomes component would then require the collection and evaluation of social data; similarly, economic information would require economic outcome data.

Inputs, actions, and outputs can be evaluated using all three data types (biophysical, social, economic (Figure 9), as these components, as intermediate measures, are not generally evaluated relative to their impact on the objective. A biodiversity conservation objective may well require social, economic, and biophysical resources in order to carry out management actions. Similarly, these actions may require social, economic, or biophysical activities. However, the outcomes of these actions must be measured in terms of its effect on the biodiversity objective, and hence measurements are required on changes in biodiversity based on biological or ecological data. Error! Reference source not found. provides examples of the different kinds of data and information that can be used at each of the variables that can be used in each of the steps in the staircase reporting model.

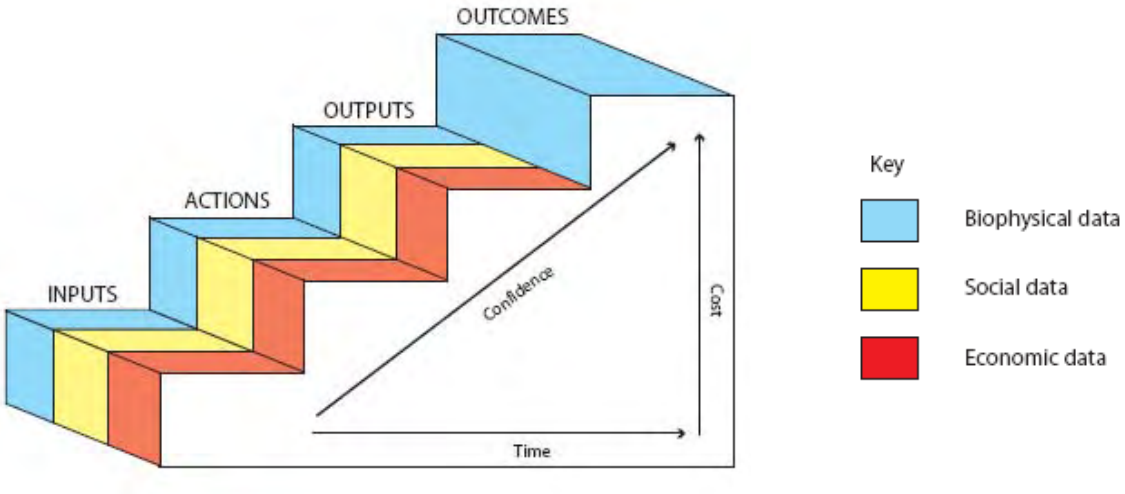

Figure 9: The three data types (biophysical, social, economic) all contribute to the steps in the staircase reporting model. However, only biophysical data are used at the final outcomes step.

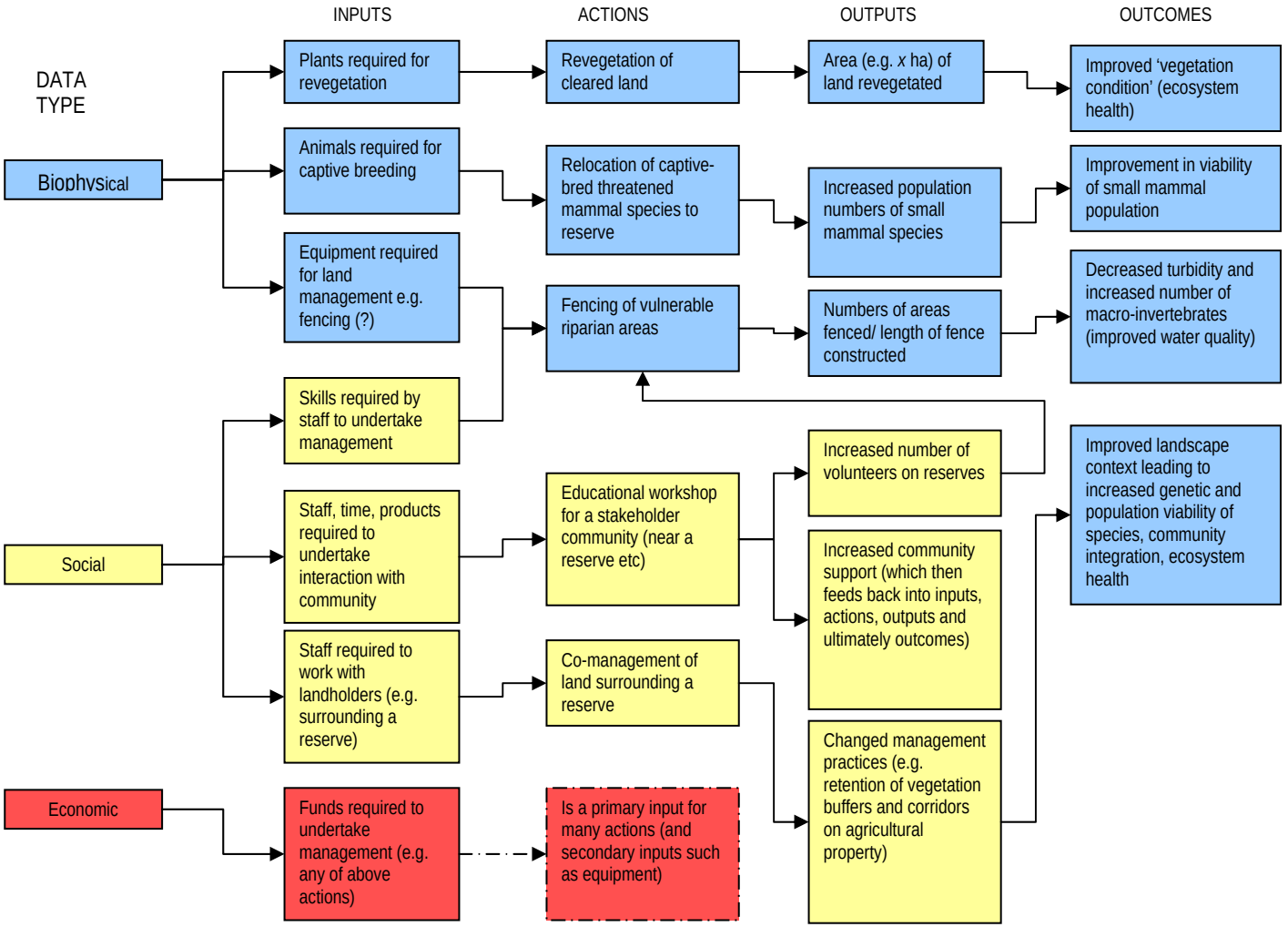

Figure 10: Examples of biophysical, social and economic data that can be used at each step in the staircase reporting model. For biodiversity outcomes reporting, only biophysical data and information are used.

In order to provide the best information for programme accountability, the aim of a monitoring and evaluation system should be to generate information that will enable the focus of reporting to move up the staircase over time. For example, when a programme is commenced, the reporting emphasis will usually be on the planning and inputs due to a lack of biophysical monitoring data. The reporting will therefore rely upon the programme logic to convince the interested stakeholders that the planning and inputs are contributing to the stated conservation objectives. As time passes, actions will be coordinated and implemented and the emphasis will gradually shift to outputs, and then to outcomes. While the emphasis may shift, the collection of information on previous components should continue so that there is a progressive accumulation of monitoring and evaluation information from all the steps in the staircase reporting model.

Surrogate measures

In the absence of reliable data on outcomes, it is possible to use data about inputs, actions and outputs as indirect or surrogate measures of outcomes. This is often necessary due to the lag-time effect discussed previously: biophysical attributes often take extended periods of time to change in response to management interventions. It is therefore difficult to report effectively on these over short time periods. The trade-off in using indirect measures is that there is a decrease in the confidence that can be placed in the reporting compared to reporting based on direct biophysical measures of outcomes. As noted above, expert knowledge, combined with scientific evidence where available, can increase the level of confidence by providing a robust programme logic. This will increase the level of certainty placed on the predictions of the potential impact the indirect measures will have on the biodiversity outcomes.

Indirect measures provide contextual information about the outcome which is useful in helping to interpret the reasons for and the significance of the outcomes (Figure 11). The indirect measures assist in understanding the costs and benefits of achieving the outcomes. For example, take the scenario of a protected area where conservation management has achieved its objective of 'ecologically effective numbers of priority critical weight range mammals' through the maintenance of high levels of coarse woody debris. However, this outcome may have been achieved without consulting and educating adjacent landholders who as a result harbour concerns about the fire hazards of this management intervention. The result is strong community opposition to the project. While the community concern does not change the outcome at the time of reporting, it is important information and may well be detrimental to achieving future outcomes. Taking a progressive approach and aiming to move up the 'reporting staircase' over time is necessary in order to learning from reporting on outcomes. Adaptive management is a tool that is vital for programmes wishing to improve their management process, and especially outcomes. Adaptive management requires an approach which allows explanatory (indirect) variables to be analysed against the response (outcome) variables.

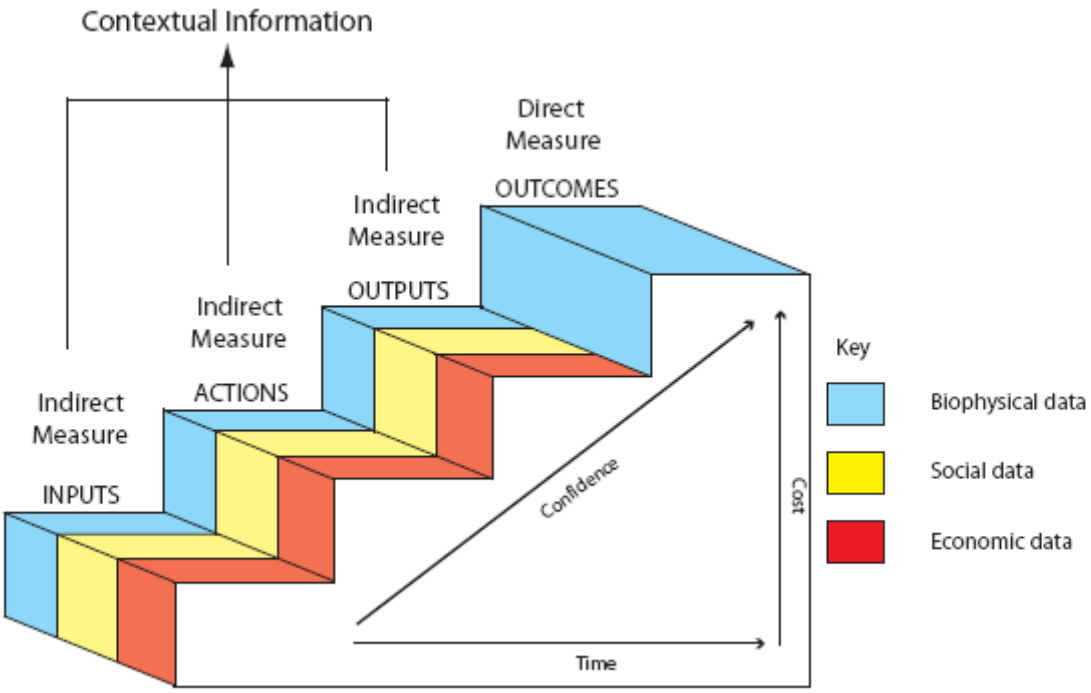

Figure 11: The Staircase Reporting Model showing how indirect data (about inputs, actions and outputs) can be used in outcomes reporting to help provide context for interpreting the reasons for and significance of outcomes, along with insight into confounding problems that might threaten future conservation success.

THE INFORMATION HIERARCHY SUB-MODEL

In addition to considering the use of information from different management components and different data types, it is also necessary to consider what level of information is most appropriate to present to the stakeholders. Given that the focus of the Increment project is biodiversity outcome reporting, this question is considered here at the outcomes step only; we note in passing that the level of information is also a relevant consideration when reporting on the other steps in our staircase reporting model.

What is meant by the 'level' of information? Amongst the stakeholders that have an interest in and financially support a conservation programme there exists different requirements and preferences with regards to the content and presentation of outcome information. In order to most effectively report to these diverse stakeholders, their various requirements and preferences must be identified and materials designed to provide them with the most suitable information. Identifying stakeholder requirements and preferences is usually determined through, among other things, interviews, surveys, and workshops.

In considering the different kinds of information that are collected, analysed and reported on in conservation programmes it is possible to identify four relatively discrete levels that represent significant transformations of data and information. We refer to these four levels as the 'Information Hierarchy'; which can then be considered as a sub-model within our Staircase Reporting Model. At the base (Level I) of the hierarchy are the raw data collected from a monitoring and evaluation programme. Level 2 represents the results from the statistical analysis of the raw data. In Level 3 the results from the data analysis are further

processed using a model that generates an index value that is more directly related to the biodiversity target. Finally, the information in Level 4 represents a qualitative interpretation of the modelled index values using a story or narrative in plain English. The four levels in the Information Hierarchy are illustrated in Figure 12: The "Information Hierarchy" sub-model illustrating the four levels representing increasing transformation in the data. See text for detailed description of each level. We suggest that the different requirements and preference of the stakeholders can be matched to one or more levels of these levels. Consequently, the Information Hierarchy provides a useful tool for understanding how stakeholder information needs can be matched to the different kinds of data and information that can be generated by a biodiversity conservation monitoring and evaluation programme.

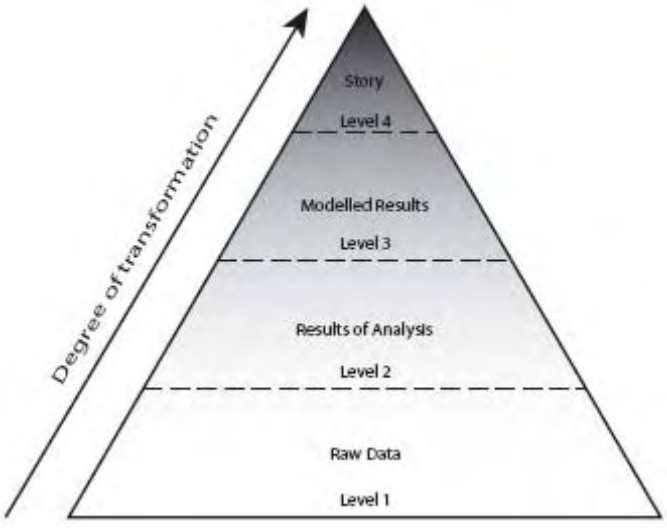

Figure 12: The "Information Hierarchy" sub-model illustrating the four levels representing increasing transformation in the data. See text for detailed description of each level

Using the hierarchy – a viable population example

The use of the Information Hierarchy can be illustrated by using hypothetical examples based on the Bush Heritage monitoring program[2]. For example, let us pose a hypothetical objective that relates to 'viable populations', using as our starting point an overarching objective of maintaining or improving biodiversity (on acquired land) at all biological and ecological organisational levels, namely (1) genetic, (2) population, (3) community, and (4) ecosystem (Gilmore 2006 pers comm.; Gilmore *et al.* 2006).

The first example relates to the maintenance of population viability of a priority species; the near-threatened Brown Treecreeper (*Climacterus picumnus*) which occurs on a number of Bush Heritage reserves (Figure 13). Level 1 of the information hierarchy equates with field observations of bird species presence and abundance. These observations require statistical analysis through which an estimate of the total population size can be calculated; the results of which then form Level 2. In order to understand what this population size means in terms of viability, an ecological modelling tool such as Population Viability Analysis (PVA)

[2] Caution: These examples are purely hypothetical and do not describe the actual Bush Heritage biodiversity objectives

may be utilised to provide a statistical estimate of the risk of extinction the population faces. The results of the PVA modelling equate with Level 3 of the information Hierarchy. Finally, the results of the risk analysis can be communicated by a plain English story (Level 4) such as "The Brown Treecreeper population at property *x* is healthy and flourishing".

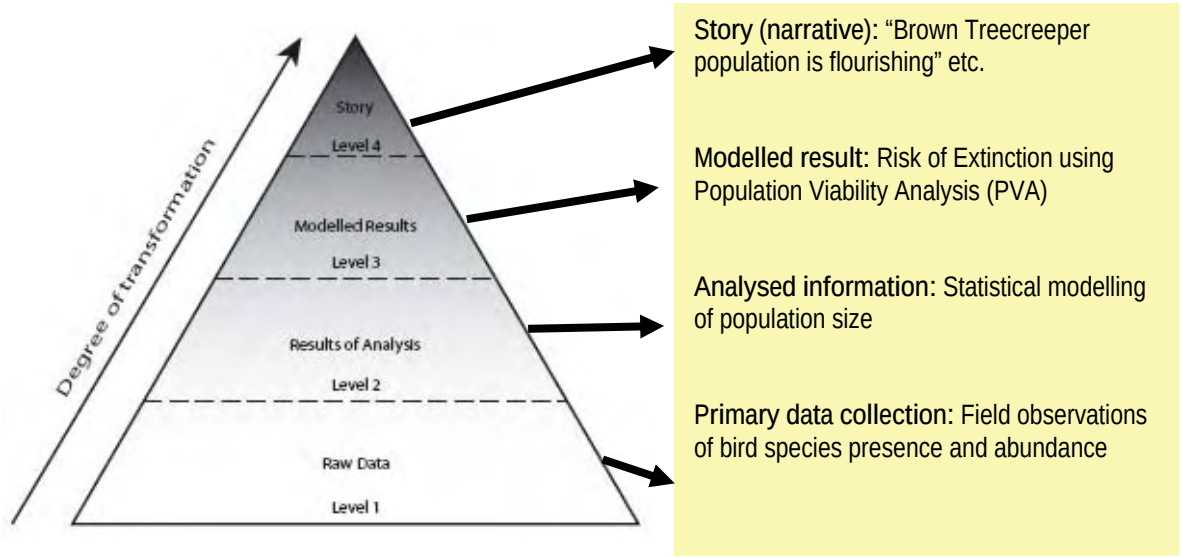

Figure 13: Application of the Information Hierarchy model to a hypothetical Bush Heritage biodiversity conservation objective: Improving the population viability of the Brown Treecreeper

The outcomes information reported at a given level can be combined with data from indirect measures of conservation success. For example, financial investment data (an economic input) can be plotted against the modelled Level 3 information on the PVA risk of extinction risk (Figure 14). In this way, the financial information provides useful context for interpreting the ecological outcomes data. Relationships between investment and outcome can also be used to show investment options for the future, and the effect these options are likely to have on conservation outcomes for the treecreeper population. Indirect contextual information can also be used as an educational tool, where through combination with outcome data, the effect and importance of ongoing investment (or management actions) to achieving outcomes can be demonstrated.

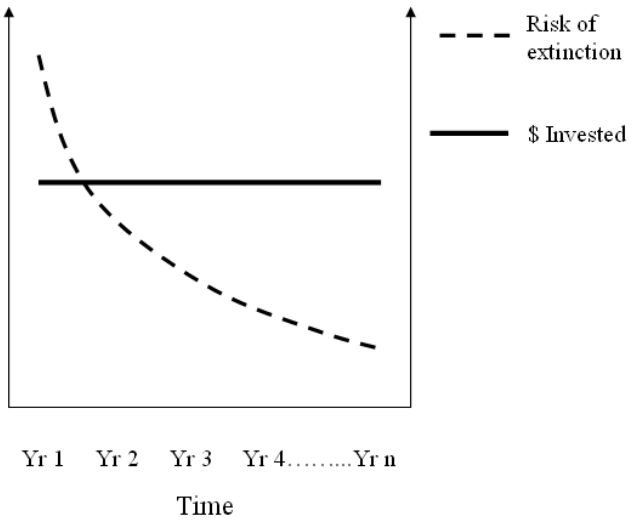

Figure 14: Risk of extinction vs $ invested

Using the hierarchy – an improving ecosystem health example

As an example of a hypothetical Bush Heritage ecosystem-based biodiversity objective, the Information Hierarchy can be applied to assessment of ecosystem health as measured by vegetation condition (Figure 15). Let us assume that for Level 1 a Bush Heritage survey team collects field measurements of vegetation structural attributes such as foliage cover, number of strata, presence of large hollow-bearing trees, and cover of coarse woody debris at selected sites, and also utilise remotely sensed satellite data of vegetation greenness. At Level 2, the raw data are analysed to produce estimates of Gross Primary Productivity (GPP) in different plant growth forms (e.g. grass and woody plants) over time. These results can be used to derive estimates of vegetation condition which can be expressed as a score or ranking at a point in time, or as change over time (Level 3). A recent procedure for describing vegetation condition in such a manner is the VAST (Vegetation Assets, State, and Transition) framework (Thackway and Lesslie 2005). Level 4 information could then be provided by interpreting the VAST vegetation condition information through an engaging story about how the health of the land has improved since Bush Heritage began its progamme on this property.

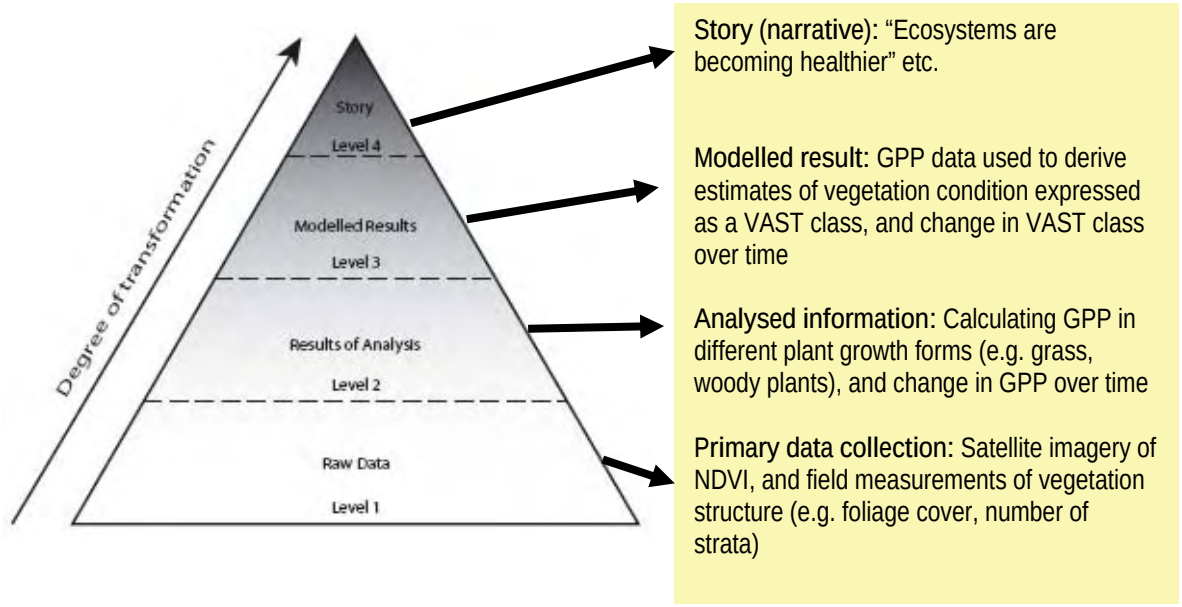

Figure 15: Application of the Information Hierarchy model to a hypothetical Bush Heritage biodiversity conservation objective: Improving ecosystem health

Using the hierarchy – a community integration example

Maintenance and improvement of the level of community integration at Bush Heritage reserves is a community-level objective for the organisation. This example is more complicated than the previous two as it deals with a concept that is still under development within the scientific community. However, it is included here as community-level biodiversity objectives are increasingly being viewed as important. Also, Bush Heritage has considerable in-house expertise in this field. The Information Hierarchy is particularly useful in this example as it provides guidance for how the complex raw data and derived variables might be distilled into information that is more accessible to all stakeholders.

Let us assume that community integration is calculated for Bush Heritage reserves using measures of the abundance of an indicator animal group (in this case birds) and the body weight of each species (Level 1). The relationships between the densities of each species relative to its weight are the statistical information that comprises Level 2. The results of this analysis could be ranked in a simple manner such as 'excellent, good, fair, and poor' (Level 3). Again, this index could be given a plain English rendering through a narrative along the lines of "The ecological integrity of bird communities has improved from a 'poor' level in 1995 and is currently at an 'excellent' level, indicating that these communities have greater stability and resilience to future environmental change" (Figure 16).

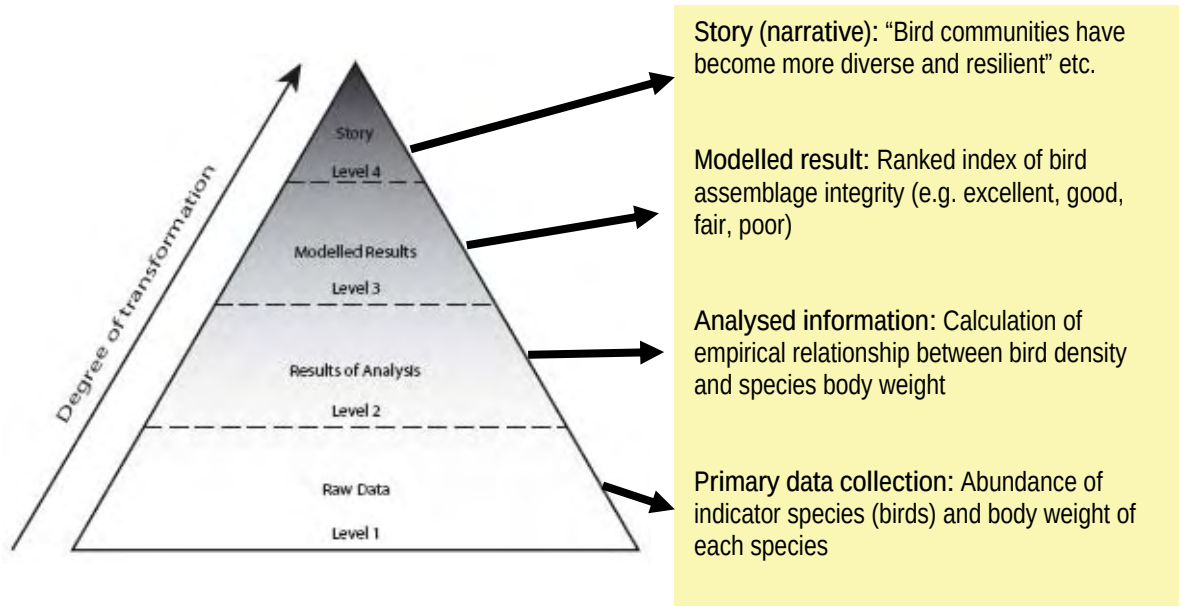

Figure 16: Application of the Information Hierarchy model to a hypothetical Bush Heritage biodiversity conservation objective: Maintenance or improvement in the ecological integrity of bird communities

CONCLUSIONS

The Staircase Reporting model provides the broad conceptual framework for considering the conservation outcome reporting requirements in the context of the components of the standard programme process. Our approach builds upon the generic conservation management process as defined by the WCPA-EF (evaluation framework). The generic characteristics of the framework allow greater potential for transferability of approaches between organisations and will promote the comparison of monitoring and evaluation programmes and associated biodiversity outcomes reporting. The Staircase Model adds value to the WCPA-EF by clarifying the use of contextual information, expert knowledge, and different data types in outcomes reporting. Data relating to inputs, actions, and outputs can provide useful contextual information and can broaden the potential for learning and adaptive management. However, our Staircase Model suggests that by 'moving up the staircase over time' (and accumulating data in the process), an organisation's focus should increasingly be on outcome evaluation and reporting. The Staircase Model shows how different data types can be included in outcomes reporting and illustrates how all data types can be are useful. However the kind of information used to report on outcomes is determined by the type of programme or organisational objective (e.g. biological and physical data for biodiversity conservation objectives). The role of expert knowledge in informing the programme logic is also acknowledged.

The Information Hierarchy' is a sub-model within the Staircase Reporting Model. The Information Hierarchy shows how information on outcomes can be generated at four levels; where each level represent a higher degree of data and information transformation.. The four levels identified – (1) raw data, (2) results of analysis, (3) modelled results, (4) narrative –

need to be matched to stakeholder information requirements and preferences in order to effectively satisfy accountability demands.

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CHAPTER 3
STAKEHOLDER NEEDS ANALYSIS

Eleanor Sobey, Rebecca Letcher and Susan Cuddy

To be effective, a reporting tool must satisfy the requirements of those to whom the reporting is targeted – that is, the 'information stakeholders'. The literature review written for the Increment project (Section 1) identified a number of issues associated with reporting. These issues centred on the type of information that is reported, and the presentation of this information. It also highlighted the variability that often exists in the requirements relating to each of these factors, which further emphasises the need for stakeholder consultation. To elicit these requirements, a stakeholder needs analysis was conducted. Due to the importance of this component of the work, a complete stakeholder engagement strategy was devised and is described in the following section. This is followed by an analysis of results and recommendations that emerged from analysis of stakeholder input.

INFORMATION STAKEHOLDER ENGAGEMENT STRATEGY

It is crucial for successful product development that known and potential stakeholders are consulted to assist in developing a product that is both usable and useful. This consultation needs to be well planned to identify stakeholder groups, make the most of the limited engagement opportunities, establish realistic expectations of what can be achieved, and make the most of the gathered information.

Objective

The primary objective was to gain an understanding of the expectations and preferences of key information stakeholder groups with respect to reporting on biodiversity conservation outcomes. Of course, this required identifying key stakeholder groups in the first instance.

As with any engagement strategy, additional benefits accrue, including

- education of stakeholder groups on reporting frameworks,
- raising the profile of the project objectives, the project team and the sponsor organisation/s
- enforced rigour in project management to accommodate the stakeholder engagements

- development of prototype material very early in the life of the project.

Key groups

A standard business definition of stakeholders is that they are the individuals, groups or organisations who are actively involved in a project, are affected by its outcome, or are able to influence its outcome.

The inclusion of Australian Bush Heritage as the case study organisation for the project proved key to being able to identify and engage with relevant stakeholders within the timeframe of the project. As our focus in the project was to develop high level design specifications for reporting on biodiversity conservation outcomes, this could be further restricted to those stakeholders whose main interest lay in information reporting. We have used the term 'information stakeholders'.[3]

We have used ABH 'information stakeholders' as a representative sample of the broad range of stakeholders in the biodiversity conservation industry. This allowed us to limit the engagement strategy to those people who were connected to Bush Heritage in one of two roles:

- as a financial investor, or
- as a potential beneficiary of the methodology or the reported information.

These two groups were identified as critical and essential, ie not meeting their needs would have a high, negative impact on the usefulness of the reporting tool.

The financial investor group (henceforth termed 'investors') was disaggregated into:

1. Government organisations – those who are directly or indirectly responsible for the allocation of government funding to Bush Heritage projects
2. Philanthropic investors – defined as those giving $25 000 or more over three years to Bush Heritage
3. Small investors – defined as those giving less than $25 000 over three years to Bush Heritage (should check that this is how they were defined when the donors were chosen for the workshops)

The information beneficiaries group (also referred to as 'non-investors') was disaggregated into:

4. Conservation or environmental non-government organisations (NGOs): non-government users of the information contained in the outcomes reports, and/or be interested in using the outcomes reporting approach
5. Catchment Management Authorities (CMAs) or Regions (terminology depending upon the state in which they exist) and natural resource management (NRM) policy makers: government users of the information contained in the outcomes reports and/or interested in using the outcomes reporting approach
6. Internal (Bush Heritage) staff – such as Reserve Managers who assist in the implementation of the monitoring and evaluation (M&E) approach and who will use the information from the outcomes reporting for adaptive management purposes, and

[3] When considering the design, implementation, deployment and maintenance of the reporting tool, 'stakeholders' must be expanded to include the IT, marketing and business sections of the organisation, business analysts, vendors, data providers, etc.

the Bush Heritage ecology team who also assist in the implementation of the M&E approach and can provide feasibility information regarding the information reported.

Figure 17 is a hierarchy diagram of ABH key stakeholder groups.

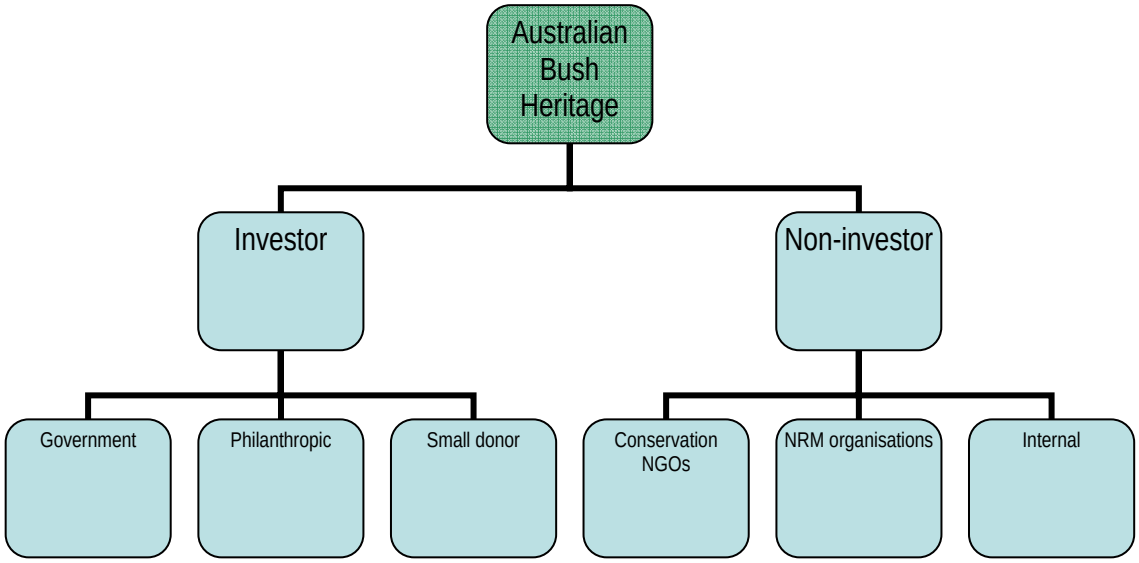


Figure 17: Hierarchy of Bush Heritage key information stakeholder groups

KEY ISSUES

A review was conducted as part of the literature review on conservation biodiversity outcome reporting frameworks and is described in another section. This review focussed on communicating conservation success and informed the project team of the key issues to draw out from the stakeholders. These are summarised in the following table:

Table 7: List of data to be collected from stakeholders, organised by theme

Theme	Information to be elicited
Content	1. Scope (biological, social, process – all or selective) 2. Spatial scale of information (national, property) 3. Level of detail (comprehensive, summary) 4. Timing of information (project 'developmental' information, project 'conclusion' info) 5. Source – from outcomes monitoring program, or whether additional information will need to be gathered
Presentation	1. Style of information (text, statistics, pictures, graphics 2. Method of presentation (paper, online) 3. Frequency of reporting (annually, monthly etc)
Context	1. Understanding of ABH's objectives and methods 2. Motivation for support 3. Expectations of ABH 4. Preferred level of engagement with ABH

DATA COLLECTION AND ANALYSIS METHODS

A quantitative analysis of needs and preferences requires considerable attention be given to preparation of presentation material (e.g. mock-ups, storyboards) that users can score in some way. It is also usually iterative, ie preferences are refined through cycles of interaction, with users preferences fed back to them by way of revisions of mock-up material. An early decision was made that this approach would be too prescriptive at this time in the life of the project and that a qualitative analysis would be sufficient. This decision influenced the style of interaction with stakeholders and the type of material prepared.

Four standard methods were considered:

- review of existing documentation
- survey by questionnaire
- interview
- focus groups.

A review was conducted as part of the literature review and is described elsewhere.

Primarily because of the decision to proceed with qualitative analysis, the effort and time required to design, implement and analyse a questionnaire style of online and/or paper-based survey (which is a primary data collection method for quantitative assessment) was judged to not be the best investment of resources.

The team used a combination of interviews and focus groups to elicit information. Focus groups were used for small donor elicitation, while interviews were used for all other information stakeholder groups. These were conducted in a semi-structured format to avoid biasing the data and to allow a wide range of information to be gathered. For consistency, the same set of information aids was used for both methods.

A set of ten open-ended questions formed the basis for most of the interviews, and are included in the Appendix to this section. These focussed on eliciting content and providing some context. Presentation preferences were elicited somewhat indirectly with the aid of eight 'mock reporting products'. These products were single page hard-copy examples of the level of detail that could be included in a report, and of the different styles that information could be presented in. The information used in the mock reporting products was hypothetical, however it was based on Bush Heritage objectives and reserves. The products reported examples from different biodiversity organisational levels (population, community, and ecosystem) at Level 3 (modelled or ranked results) and Level 4 (story or narrative) of the information. Samples are included in an Appendix to this report.

The Data Collection Programme

The engagement programme was built around the availability of stakeholders and project staff within a three month period. Table 8 summarises the engagement programme with Bush Heritage information stakeholders that enabled the project team to gather information from 59 individuals. The interviews with philanthropic investors and the focus workshops with small investors were conducted by Bush Heritage staff.

For reasons of privacy and confidentiality of information provided, the names of the interviewees and the particular organisation or department for whom they are employed are not revealed.

Table 8: Bush Heritage stakeholder groups interviewed, number of interviews and number of participants in each interview.

Stakeholder Class		Number of Interviews	Number of Interviewees
Government Investors		2	4
Philanthropic Investors	Individuals and organisations	19	19
Small Investors	Focus workshops	2	20
Non-government Organisations		1	1
NRM Organisations	CMAs/Regions	1	2
	Policy Officers	1	7
Internal Bush Heritage staff	Ecology team	1	5
	Reserve manager	1	1
	SUM	28	59

Due to time restrictions on a small number of the interviews, not all questions could be asked at each interview. All engagements lasted between approximately 45 minutes to two hours.

Analysis Methods

This form of stakeholder-needs elicitation precluded any form of statistical analysis of the results. Factors included the semi-structured format of the interviews, the uneven sample size (different numbers of respondents in each stakeholder class), different treatments (not all of the ten questions was asked at each interview), and different interview method (one-on-one, small group, workshop).

Results were instead analysed by drawing out the major themes from the interviews at different levels of stakeholder aggregation. This was appropriate for the survey type, and allowed different levels of detail to be explored and evaluated. There were a number of steps used within the interview analysis:

Step 1: Compilation of interview transcripts according to their stakeholder group

Step 2: Identification of the major themes and variation around these themes within each set of questions, for each stakeholder class

Step 3: Identification of broad stakeholder groups (where a group is made up of two or more stakeholder classes) based on similarities in the major themes

Step 4: Application of the findings of the previous steps to the development of a reporting tool for Bush Heritage

The results are presented in two ways:

- by themes and characteristics
- by common threads

From these, a series of conclusions and recommendations complete this section.

ANALYSIS OF REPORTING NEEDS BY THEME

Seven broad themes were used to tabulate stakeholder responses to the three sets of questions, being

- Context
  - stakeholder understanding and expectations
  - degree of confidence
- Content
  - spatial scale
  - temporal scale
  - types of information
- Presentation
  - level of information detail
  - presentation of information

These are described below, with responses from each of the six stakeholder classes described within each theme. The responses are summarised in Table 9. Note that the summary does not include much of the important subtle detail and nuances.

Understanding and Expectations

This theme looks at the extent of knowledge that the different stakeholder groups have about conservation organisations in general, and in Bush Heritage in particular. This information was used to filter the content and presentation results as they were perceived to be heavily biased by the degree of understanding and expectations of the group.

Government investors

Although government investors tended to have only a general idea of Bush Heritage's overall goal and methods, they had a high level general understanding relating to private nature conservation organisations. For example

> *"Basically, Bush Heritage is about trying to protect biodiversity values in selected priority areas around Australia"*

In particular, they emphasised that management is a vital component of achieving conservation outcomes, and that it represents a large percentage of the costs involved in comparison to acquisition costs.

Philanthropic Investors (Individuals and Organisations)

Philanthropic investors showed good understanding of the goals and methods of Bush Heritage. Their responses to the context questions showed that they understood that Bush Heritage worked through both land acquisition and management. For example, a philanthropic investor neatly encapsulated the goal and methodology of the organisation:

> *"[Bush Heritage's] main function is to preserve land that is still relatively high conservation value for flora and/or fauna protection, through acquisition."*

They placed a high level of importance on land management, and believed that

> *"leaving it to the elements is not enough, you need active management of the land".*

In fact, this element was emphasised above other forms of management such as wildlife management.

Philanthropic investors had quite varied understandings of the term 'biodiversity', ranging from "diverse vegetation" and "healthy habitats" through to biodiversity being the "complex total of all living things".

The motivations for supporting Bush Heritage and their expectations of the organisation were diverse, most commonly personal trust in a staff member(s) of Bush Heritage or a perception of Bush Heritage as practical, apolitical and allowing community involvement, while a smaller number of (individual) philanthropic investors just wanted to donate to a conservation organisation and it didn't really matter which one.

Small donors

The majority of small investors understood the goal of Bush Heritage to be biodiversity conservation, and nearly all judged land management to be of "high" or "very high" importance. However, more than 25% of respondents believed that the overall goal was land acquisition rather than biodiversity conservation4. Understanding of the term 'biodiversity' was at a high level, with more than 75% of the investors understanding it to be variation among living organisms, while the remainder were divided between "lots of species" and "healthy habitats". All small investors were motivated principally by their concern for the environment.

Conservation NGOs

There was a very high level understanding shown by the non-government conservations organisations of the role of private nature conservation organisations such as Bush Heritage. This role was seen as being

> *"to provide an alternative to public sector provision of nature conservation - this includes the provision of a variety of organisations which is healthy, because it provides a range of approaches as well as the involvement of community."*

A high level understanding was also demonstrated in the questions regarding the definition of the term 'biodiversity' and the importance of land management for achieving biodiversity goals.

> *"When considering the importance of land management versus acquisition, then tenure becomes virtually irrelevant unless interventions - land management actions - are congruent to biodiversity conservation. In other words, it is critical that the land is managed properly."*

Motivations for supporting a private conservation organisation related predominantly to the variety of alternative approaches they offered, and to their ability to involve the community.

[4] This suggests the need for greater education of small donors on the goals and objectives of Bush Heritage.

NRM organisations

The NRM organisations interviewed had a good general knowledge of the issues associated with private nature conservation – of the role of private nature conservation organisations such as Bush Heritage in relation to government organisations, and of their capacity to achieve outcomes.

> *"They provide a variety of methods and approaches to conservation, which fill the variety of niches available. They also provide competition, both between private organisations, as well as with government bodies (through the competitive tender process), which helps ensure that standards of environmental management and protection are high. However, too many organisations can create confusion and have more of a negative impact than a positive one."*

The respondents also had high level understanding of biodiversity conservation – its definition, and the importance of management. There was less understanding of the specifics of Bush Heritage.

Internal

There was some confusion about Bush Heritage's national level objectives among internal information beneficiaries, centred on whether the organisation has any concrete national biodiversity conservation or biological objectives.5 It was recognized among internal information beneficiaries that there is a need for all stakeholders to understand and identify with objectives.

While this stakeholder group had a very good understanding of the meaning of biodiversity and the importance of land management, there was some concern that not all stakeholders would have a similar understanding, and the need to educate stakeholders on this topic was raised. Motivations for supporting Bush Heritage (via employment) were connected to the non-political aspect a private conservation organisation could offer, such as their ability to make decisions purely on biological factors, and their greater ability to manage land.

Degree of Confidence

Those stakeholders with direct contact with Bush Heritage were asked how confident they were that Bush Heritage was achieving its conservation objectives. This question was not answered specifically by any of the government respondents.

Philanthropic investors and Small donors

Both groups had a similar level of confidence that Bush Heritage was achieving its objectives: responses ranged from "moderate" to "very high", with the most common response being "high". Within the philanthropic investor group, three interviewees said that they were investing due to an implicit trust in the organisation (based on methods, management plans and financial plans, and staff) rather than investing based on the actual outcomes achieved.

[5] Reporting on conservation outcomes is inextricably tied up with objectives and the scale at which they exist, and therefore it is critical that this issue is sorted out as soon as possible within Bush Heritage.

However, these respondents admitted that they would like more reporting to verify/substantiate this trust.

Conservation NGOs and Internal

Internal and NGO respondents showed that while they were confident due to the high potential of Bush Heritage and other similar conservation organisations to achieve outcomes, more time is needed in order to see the results and then evaluate how well such organisation are doing.

NRM organisations

Of the NRM organisations respondents, only one replied directly to the question regarding confidence in Bush Heritage or private nature conservation organisations. They had a high opinion of and confidence in the particular private conservation organisations they have dealt with in the past (Bush Heritage was not one of these) partly because of their trust in the staff members which has developed through a good working relationship. The high opinion was also based on the track record of the organisation, which has shown that they achieve useful outcomes.

Scale – Temporal and Spatial

Stakeholders were asked to indicate which of four scale(s)(project, property, regional, national/organisational) they would find information most useful and interesting.

Government investors

All spatial scales, including the national or organisational scale, would be of use to government investors. In terms of temporal scales, long term trends were advocated by all respondents. These would be even more valuable if pre-management intervention data were available. However, they appreciated that this sort of data can be quite difficult to obtain.

Philanthropic investors

The requests for the spatial scale of reporting were highly variable. Hardly anyone was interested in reporting at a project level, with most respondents requesting national (30%) and property (25%) level. Smaller percentages were interested in a regional scale or all scales.

The property scale was considered important because of the personal connection felt by many for a particular property. This connection was often stimulated by the proximity of a property to the respondent, or because the respondent had volunteered on the property.

National level reporting was wanted in order to provide an overview of all the properties and a whole-of-organisation level understanding of the achievements of Bush Heritage.

There was general agreement that biodiversity conservation involves long-term, ongoing management, and therefore that reporting on such outcomes would require long-term trends reported. The specific time periods would be dependent on what is being measured, however most respondents requested reporting on a time scale between annual and five year reporting. A number requested outputs or indicators of “simple” outcomes (such as lists of species present,

and trends in species richness and abundance over time) in the initial interim period in which biodiversity conservation outcomes were responding to management actions.

Small donors

Small donors were not asked this question.

Conservation NGOs

There was no request for a specific spatial scale of reporting, however the comment was made that it was important that the scale of the reporting should be congruent to the scale of the intervention. Similar to the philanthropic investor group, the NGOs asked for long-term trends in variables to be reported (the specific time period of which will depend on the particular variable). However, they considered it useful for actions and outputs to be reported on annually. Due to the current climate of political and environmental instability, the NGO respondent was not at all interested in predictions of future trends, and would place minimal confidence in them if they were reported.

NRM organisations

There was no one particular spatial scale preferred by the NRM Organisation respondents. They thought multiple scales appropriate to what is being reported on would be useful, however they would find these most useful if they were similar to or the same as the respondents existing reporting requirements. The CMA stakeholder asked that the spatial scale used

> *"match the hierarchy of scales used by CMAs, for example regional program (biodiversity) and projects within this. This would enable greater ease for transferability of results."*

The NRM Organisation stakeholders were generally happy to accept that the temporal scale depends to some extent on what is being measured, and that some trends need to be over long periods of time in order for the "true" trend to be ascertained. However, within these restraints, annual reporting showing annual, five year and thirty year trends (historic not predictive) would be most useful to the CMA respondent. These time periods were chosen because the CMA's review of strategies occurs every five years, and CMAs are reporting against resource condition targets (RCTs – from the National Monitoring and Evaluation Framework) over a thirty year time period.

Internal

The importance and value of reporting at all scales (project, property, regional, and national) was recognized by internal information stakeholders. However, there was some doubt expressed as to whether it is possible to report effectively and accurately at the national scale using the current 'Bush Heritage Monitoring and Evaluation system'. This system is based on property-specific management and monitoring, and

> *"the outcomes are hence spatially explicit at this scale and cannot be simply aggregated up to represent higher scales."*

As such, the internal stakeholders felt that the focus had to be on property level reporting.

As different aspects of biodiversity take different time periods to respond to management actions, the temporal scale was accepted among internal stakeholders as depending on the particular variables being monitored. This ties in to the frequency of reporting and the shelf life of the stories, which are issues to be considered in later phases of the project but which were not analysed specifically here. Like the non-government organisation response, this stakeholder group believed that there is too much uncertainty to report predictions for the future, however a slightly different option was suggested, in which trends are reported to show where Bush Heritage wants to be in the future.

Types of Information

Stakeholders were asked whether there were certain types of information that would increase their confidence that conservation objectives (in this case those of Bush Heritage) were being met, and were asked to give examples that they found useful.

Government investors

Of the two government investor bodies interviewed, one considered that outcome information which was consistent with national categories, measures, and standards would be of most use (once again, this refers to the National Monitoring and Evaluation Framework 'Matters for Target'). This would allow consistency with regional bodies as well as the National Land and Water Resources Audit, and would be of benefit to Bush Heritage for leveraging funding from government agencies. The comment also applied to relating outcomes on Bush Heritage reserves to national priorities, and using national definitions and standards (for example, the status of flora and fauna species and communities) to allow increased understanding and consistency with other organisations and departments. The other government investors interviewed did not specify either for or against this suggestion for national consistency.

Both advocated that the indicators used should be kept as simple as possible to avoid confusion and to ensure greater possibility of consistency in the long term, and asked that the focus be on outcomes – particularly trends and conditions in environmental variables which are backed-up by sound programme logic. The government investors requested the same financial information as the NRM organisation stakeholders: reporting on the relationship between actions, outcomes, trends and financial investment.

Although the focus was preferentially on environmental outcomes, social information was deemed significant because it can influence the management mechanisms (e.g. stewardship payments). It was considered a "short-term measure of success", or an "intermediate outcome", and when

"integrated with biodiversity outcomes provides contextual information."

Some government departments are using their own measures of social outputs, such as community capacity, attitudes, viability and health.

Philanthropic investors

There was a strong push among philanthropic organisations/individuals for the credentials of reserve managers, ecologists and other staff members concerned with reporting to be made explicit. Suggestions for how this could be done were also given, such as in terms of training, work experience, or a list of the papers that have been published in peer-review journals by the staff members (particularly the ecologists). This emphasis on credentials is perhaps linked to the higher proportion of respondents in the philanthropic group that invested based on trust in the organisation rather than on the outcomes achieved.

Also often requested was a desire to see the linkage between financial investment and actions, and in turn between actions and outcomes. There were a number of other types of information requested: the names of key donors to be published; an independent report to be given; a general overview (particularly for the level of success in reaching the targets at whatever scale the target is set at rather than just giving examples); reporting of both the successes and the failures (if only the success stories are reported they will seem “too good to be true” and “not as believable”); and, trends over time with baseline data and targets or benchmarks clearly identified.

There was no strong desire to hear about social variables, although it should be noted that nearly 50% of philanthropic interviewees did not respond directly to this question, and as such this answer can not be considered a comprehensive/representative answer. Partnerships with other organisations, particularly collaborations with other conservation organisations, were considered one of the more important social variables. In general, social variables were only of interest if something very positive occurred, and in the form of an overview.

Small donors

Small donors were interested only in the reporting of ecological measures, and considered financial information or cost-benefit analysis of different investments and outcomes inappropriate. In terms of ecological measures, there was no clear preference for a particular data type or set of indicators. Reporting on broad indicators such as water quality or species-specific indicators were all considered to be potentially useful and interesting. Social data was not talked about specifically.

Conservation NGOs

Information on conservation outcomes would give the non-government organisation respondent the greatest confidence that Bush Heritage was achieving its objectives. This information would of necessity have to be of biological/biophysical data type; the respondent is also interested in information relating to social parameters, however this was considered only a reflection on the progress of earlier project stages, and is not as useful to evaluate outcomes. The respondent also advocated the reporting of ‘unexpected outcomes’. Unexpected outcomes were defined as those impacts on biodiversity that were not a part of the original program logic, and could be both negative and positive. This information, besides being of interest to stakeholders, is of importance for adaptive management purposes.

In addition to outcome information, for the greatest confidence the NGO respondent would need to be able to access additional information (including M&E rationales and processes, and the program logic) if desired.

NRM organisations

There were a number of data types that arose from the discussions with NRM Organisations, the most important factor being that the data reported is consistent with national categories and standards. By national categories and standards, the respondents were referring to the National Monitoring and Evaluation Framework "Matters for Target". As long as the broad matters for target were reported against, the particular indicators used would be of lesser importance, however it was recommended that 'simple' indicators may be more enduring over time. To this end, this would require information that was comparable over time, even if methods for collecting this information were to change.

There was a divide between the two respondent organisations as to what component of the management process they would be most interested in receiving data about. One respondent [National level NRM Policy] would prefer outcome information, while the other [Regional level CMA] would prefer output data. Action and output information, such as hectares of protected land within the region, was preferred by the latter as this information can then be directly reported on by the organisation, or else transformed into outcome data via their program logic assumptions and then reported on. Outcome information can be used by this respondent internally for adaptive management purposes, principally to improve the program logic, in particular the assumptions linking the outputs to outcomes. For example, vegetation cover and quality are surrogates used in the national framework for conservation outcomes. There was limited scientific discussion initially regarding the assumptions, and these assumptions could hence be improved upon, perhaps by using information from outcome reporting provided by Bush Heritage.

Both respondents would find financial investment information useful. For example relating outcomes (and percentage improvement relative to baseline data or to a benchmark) to investment so that an estimate can be gained of what has been achieved for the money spent. This would enable a 'value for investment' (bang for buck) statement rather than just a final outcome statement. Investing public money is very competitive and this sort of information would assist the government in making these sorts of decisions. This point was followed up by another respondent, who also asked for information that would enable assessment of the effectiveness of different methods of action, and effectiveness of each program.

Social measures were cautiously accepted as being useful indicators of progress or achievement, however "they would have to be used carefully". Previous experiences of the respondents have demonstrated that social data can be very expensive to collect, and can give minimal information return. The CMA is using a number of social indicators which they believe could be improved upon.

Internal

Internal Bush Heritage staff agreed that conservation reporting should be dominantly about outcomes; however stakeholders need to have the ability to

"dig into the data to uncover information relating to inputs, processes, and outputs."

In concurrence with the NGO stakeholder, they expressed the need to capture unexpected outcomes because these contribute to providing a more comprehensive picture of exactly what the organisation is achieving.

There was also a consensus that the social component was important in terms of assessing overall effectiveness of the organisation, although opinion was divided as to whether this should be included in outcomes reporting component.

Level of Detail

The mock-up products were used to gauge stakeholder preference/s for one or more levels in the information hierarchy:

- Level 4 - narrative
- Level 3 – modelled results, usually quantitative
- Level 2 – analysed information, usually quantitative
- Level 1 – primary data, such as observations and measurements.

Government investors, and NRM organisations

NRM Organisations and Government Investors preferred the level of detail commonly used in a biodiversity conservation outcome report. In essence, the most preferred level of detail was Level 3, with assurances and/or access to the levels below it (Level1 and Level 2). Furthermore, in order for Bush Heritage to obtain credibility (with one of the respondents) for reporting on outcomes, the NRM team would need to know about the M&E approach (how the data was collected), as well as to a lesser extent the credentials/qualifications of the people organising it.

Level 4 would be more useful to NRM and government investors if the narrative was more quantitative (for example, use exact amounts rather than using qualitative words such as 'improve' or 'good'). However, both stakeholder groups have the mechanisms in place to create Level 4 stories themselves as an aggregation and transformation of the Level 3 information.

Philanthropic investors

There was a mix of information hierarchy levels preferred among philanthropic stakeholder respondents. Nine respondents decided that a combination of Level 3 and Level 4 would best suit their needs. This combination would bring the scientific nature of Level 3 – such as the quantitative, factual language used to express/describe outcomes, and simplified indices of trends – into the more interesting, story-telling format of Level 4. Five respondents preferred Level 4, and six respondents preferred Level 3. Of the latter, three respondents qualified their preference by adding the proviso that extra information would be available on request, or that independent verification of the data was shown. One person was not interested in conservation outcomes reporting as their investment was based predominantly on trust in the organisation.

Small donors

There were no clear preferences amongst the information hierarchy levels considered in the two group workshops. Rather, participants tended to prefer the simple story approach (Level 4) or the more detailed 'hard' data approach (Level 3) depending upon their personal disposition and background – as such the split between the two levels was in an approximately even ratio.

Conservation NGOs

Both Level 3 and Level 4 were considered useful by the NGO respondent, who considered that a report similar to the format of a scientific report style would be useful: where there is an executive summary at the start (a very quantitative Level 4), which is then followed by more detailed supporting information such as Level 3 and even Level 2. In addition to information on the different levels of outcome reporting, there was a request for further information on sampling and monitoring strategies.

Internal

For their own personal use, the internal stakeholders required Levels 1 – 3 in order to apply the information to adaptive management practices. In addition, information on experimental design and sampling strategy etc would also be required.

The internal stakeholders also offered comments on Level 4: while more qualitative language such as "increase", "improve", "poor", "fair" are more easy to read and take in quickly, such terms are based to some extent on trust, and if used they would need to be able to be substantiated. On this basis, it was thought that it would be better to make Level 4 as quantitative as possible without becoming too detailed or scientific, which admittedly is "a fine line to walk".

Presentation Style

The mock-up products used a combination of photos, illustrations, maps, charts, tables and text to present information. Stakeholders were asked for their preferences.

Government investors and NRM organisations

Visual depiction of information (such as graphs, pie-charts, and maps) was repeatedly endorsed, on the basis that everyone can relate to these types of presentations. Spatial presentations such as maps were considered to be

> *"very effective, especially where the occurrence of investments, outputs and outcomes are also shown on the map."*

The scorecard used in the national level mock information products was also well received. The reserve manager narrative was considered appropriate for Level 4, and could be used by one of the respondents within a case study situation.

Philanthropic investors

There was divided opinion on the use of text as a presentation style among philanthropic stakeholders:

- although photos were interesting, the actual textual information is more important and the photos should not be allowed to crowd out the information (6)
- text was not the most interesting or useful presentation style, and preferred maps, graphs and photos(5).

The reason/rationale for preferring maps, graphs and photos for some of the respondents was that the eye of the reader tends to fall naturally on the graphics first, and therefore these media should be used to tell the story rather than relying on the text. Nearly all philanthropic respondents agreed that if graphics are used, then they should be kept as simple as possible. The water quality index graph was voted an 'excellent' example of what was required by three respondents.

A large proportion of the respondents thought that the national Level 3 scorecard was a good idea, but it would need to be simplified such that it can be understood without too much extra explanation. Before-and-after photos were also considered a useful presentation method by a small number of respondents.

The reserve manager narrative used in the mallee fowl Level 4 reporting product was liked by some, and disliked by others. This appeared to be simply a personal preference, in which those who liked it thought it added interest and a personal touch, while those who disliked it thought that it was not useful and didn't add much extra information to the outcome story.

There was also division among the philanthropic stakeholders as to the order in which the information is presented: there was an even split between those who preferred the background and objectives first, followed by the actions and outcomes, and those who preferred to have the outcomes placed at the start of the report so that this is what they read first if they don't have much time.

Small donors

The small donors were in agreement that the structure of the report information should be objectives and background first, followed by actions and outcomes. It was felt that this method would make the inclusion of statistical data included in the report more comprehensible and acceptable to those with a non-scientific background.

Photos were considered essential to maintain the interest and attention of those who preferred a simple Level 4 reporting style. However, they should be more than great photographs of individual species or landscapes. They should be illustrative of the story and should complement the text. There was general agreement that photographs illustrating before-and-after scenarios will be the best tools for illustrating pictorially the success of Bush Heritage's management actions on reserves. Carefully chosen photographs will be acceptable as evidence or as being complementary to other data to those who preferred Level 3 detail.

Simplicity was wanted by many respondents, for statistical data, graphics and text. For example, it was suggested that acronyms be avoided, simple explanations of concepts or terms be provided, and simple headings such as "Problems", "Actions Taken", and "Success to Date" be used as opposed to terms such as inputs and outcomes.

Conservation NGOs

A combination of presentation styles would appeal to the NGO respondent, particularly spatial presentations such as maps, as long as they are kept simple and add to the story. The use of photos was also advocated. Landscape photos are useful for illustrating the type of country and habitat being described, and also help to refresh the memories of the readers as to the characteristics of the reserve being reported on. "Before-and-after" photos would only increase the respondent's confidence if they were accompanied by quantitative data and climatic context. If graphs are used, they must be easily understandable.

Modelling techniques can be quite contentious (for example, the respondent does not personally favour the use of population viability analysis techniques), and feels that including the modelling in the outcome report may detract confidence in the outcome, particularly among those with a scientific background.

Internal

There was no particular style(s) of information presentation preferred by the internal stakeholder interviewees. Rather, they thought that all styles had their use, and a combination should be used to maintain interest and effectively communicate the outcome information. In line with many of the philanthropic investors, they felt that photographs should not take precedence over the text, and that the graphs and charts should be kept as simple as possible without corrupting the data. It was recommended that comparison photos of neighbouring properties and Bush Heritage reserves should not be used as this can be seen as a criticism and can cause bad relations with landholders.

Table 9: Summary of Information reporting needs by stakeholder class

Stakeholder Type	Degree of Understanding	Degree of Confidence	Spatial Scale	Temporal Scale	Types of Information	Level of Information Detail	Presentation of Information
Government Investor	Very good: general**	Not asked^	All scales, including national	Long term trends, including baseline data before actions occurred	1) Consistent with national measures 2) Unexpected outcomes 3) Simple measures 4) Social info 5) Linkage of investment to actions and outcomes	Level 3 with access to levels below. Level 4 as case study	1) Simple text 2) Graphs useful
Philanthropic Investors	Good: specific* (less understanding of ABH overall goal, and meaning of biodiversity)	High	Property and national	Varied responses: long term trends with outputs and species lists annually in time-lag interim; annual trends; five year trends	1) Qualifications of staff 2) Trends over time with benchmarks/baseline data 3) Linkage of investment to actions and outcomes 4) Minimal-nil social info	Mix of Level 3 and Level 4 most requested, remainder split between Level 3 and Level 4	1) Opinion divided between "Don't reduce text to accommodate photos" and "graphics (maps, graphs, photos) better than text" 2) Simple graphics 3) Scorecard and index ideas good 4) Opinion divided between structure (outcomes first or last)
Small donors	Good: specific* (less understanding of ABH overall goal)	High	Not asked^	Not asked^	1) Environmental/ ecological measures 2) Not financial data 3) No comment on social measures	Evenly divided between Level 3 and Level 4, access to further info	1) Photos good if they complement story 2) Structured as problem, action, outcomes 3) Simplicity of text and graphics
Conservation NGOs	Very good: general**	Low - more time needed to evaluate	Multiple, depending on what is being measured	Long-term trends, actions & outputs annual in time-lag interim. Not predictions	1) Focus on outcome information 2) Unexpected outcomes 3) Ability to access further info 4) Social info	Level 3 and Level 4, and access to further info	1) Spatial (maps) good 2) Narrative good 3) Complementary/illustrative photos 4) Not modelling results (eg PVA)
NRM organisations	Very good: general**	Moderate	Multiple, consistent with NRM organisations requirements	Satisfied to have time periods determined by what is being reported. Annual, 5 year, & 30 year trends most useful	1) Consistent with national measures 2) Investment info 3) Social info 4) CMA wants outputs, NRM wants outcomes	Level 3 with access to further information. Level 4 as case study	1) Visual information, particularly spatial is very effective
Internal	Very good: general** & specific*	High - more time needed to evaluate	Project, property, regional. National not feasible at the moment	Satisfied to have time periods determined by what is being reported. Not predictions.	1) Focus on outcome info 2) Unexpected outcomes info 3) Ability to access further info 4) Social info	Level 3 preferred by RM, Levels 1-3 by ecologists, access to further information	1) Combination of styles 2) Don't reduce text to accommodate photos

*Specific: knowledge specific to Bush Heritage. **General: knowledge about general role of private nature conservation organisations. ^Not asked due to time constraints

IMPLICATIONS FOR DEVELOPMENT OF A REPORTING TOOL

This analysis illustrates the wide variety of requirements of the Bush Heritage information stakeholders. This stakeholder analysis has several implications for reporting undertaken by ABH.

1. The overall goal of Bush Heritage (preservation of biodiversity through land acquisition) should be made clear on both the website and also in each outcome report, and similarly for the definition of the term 'biodiversity'. There were a number of stakeholder types for whom these aspects were not clear, and it is essential for the definitions and objectives of the organisation to be clear in order to report against them.
2. Even more importantly is the need for the specific objectives to be agreed upon by Bush Heritage staff and then made explicit, at all levels (i.e. national, bioregional, property, and project objectives), and via all communication media (e.g. website, annual report, outcomes report).
3. Reporting should occur principally at the property and national spatial scale, and if possible and appropriate, at the project and bioregional scale. The particular method for reporting at the property and national scale need not be the same: at the property scale the focus should be on reserve-specific objectives and trends, while at the national scale stakeholders were generally more interested in a broad overview of the contribution or success of the organisation as a whole.
4. In terms of the temporal scale, reporting should be focused on long-term trends, the scale of which is determined by the particular indicator. In the initial period of acquisition and management of a reserve during which time there is little data or trends to report, simple outputs such as lists of species richness and abundance would be of interest to many stakeholders. Predictions of future trends in environmental variables would not engender increased confidence, and for this reason should not generally be included in outcome reporting.
5. Environmental and ecological outcomes should make up the greater part of the information content in the outcome reports. A small amount of social information should be included, as well as some measure of the relationship between financial investment and the outcomes. Other information regarding outcome monitoring, evaluation, and reporting such as M&E approach, and sampling strategies should also be available as an electronic link or via request. Staff credentials could be placed on the Bush Heritage website rather than within the outcome reports, as while this was strongly desired by philanthropic investors, it was not requested by other stakeholders.
6. The level of detail should be aimed at a more quantitative version of Level 4. In other words, the scientific data-based element of Level 3 should be brought up to Level 4 – for example, instead of reporting that malleefowl populations have increased and become more viable over the 5 years that the management plan has been implemented, reporting should state what the initial population number were and what they are now without

necessarily including the modelling or statistical aspects for calculating viability. If the modelling elements of Level 3 were included in the outcome report, they should be in the form of simplified index trends or scorecards.

7. Level 3 should also be available to stakeholders in its entirety. Given the popularity of this level among stakeholders, it would be worthwhile including explanations of the modelling results to ensure they are understandable to the majority of stakeholders. Level 1 and Level 2 were not as commonly requested, and as such may only be available to those who specifically request it. Given that those interested in it are most likely to be those with a scientific background these levels need not be modified or annotated to the extent Levels 3 and 4 were.
8. The preferred presentation of the outcome information tends to be highly personal, and as such the best method for coping with the many different presentation format requests would be to use a combination of styles. This combination would need to balance the relative amounts of each presentation type (i.e. text, graphs, charts, photographs etc). Graphs need to be kept as simple as possible, perhaps through the use of indices or scorecard type approaches. Photos need to be useful, and add to and substantiate the story being told, rather than just being a great picture. The structure of text should be chronological (e.g. problem-action-outcome), but for those stakeholders who would have preferred the outcomes first, this can be circumvented by having the outcome described in the title. For example, “Improved Water Quality at Natural Springs on Carnarvon Station Reserve”. All elements of the reporting presentation should be kept as simple as possible to facilitate ease of understanding and comprehension.

Many of the recommendations listed can be implemented almost immediately, and are consistent with the existing ‘Biodiversity Outcome Monitoring System’ used by Bush Heritage, however a number of them will require further research and time before they can potentially be implemented. Given the numerous requests for reporting at the national scale, further consideration needs to be given to this aspect. This scale of reporting does not have to be of the same nature as the property scale reporting, rather it should be used more as a general overview of the organisation. This may require additional indicators to be included in the monitoring system, or it may require different analysis of the current indicators. Further research will need to be conducted into the most appropriate social variables to be included in the outcome reports. One measure that has been specifically requested a number of times by stakeholders is collaboration between Bush Heritage and other conservation NGOs. Agreement on Bush Heritage’s objectives at all spatial/organisational levels will also need to be tackled in the immediate future. Following agreement on this, the objectives need to be made explicit to all stakeholders, and the definitions and importance to biodiversity conservation made clear.

APPENDIX 1 – SURVEY QUESTIONS

Interviewers used a core set of 13 questions to guide the interview and focus workshop discussions. These are reprinted below.

'Context' questions

1) What do you think Bush Heritage is trying to achieve in relation to conservation?

2) Why do you support Bush Heritage?

3) How confident are you that Bush Heritage is achieving its conservation objectives?

4) Do you think management of individual properties is important for achieving conservation goals on Bush Heritage properties?

5) What do you understand by the term "biodiversity"? (for example, lots of different speices, healthy habitats, variation among living organisms, other)

6) Are you interested in receiving any kind of information (for example, in the newsletter, emails, reports, website updates) on a regular basis about Bush Heritage's progress in meeting its conservation goals?
   a) not interested
   b) moderately interested
   c) very interested
   d) need more information before making a decision

7) Why are you / aren't you interested?

'Information Content' questions

8) At what scale(s) would you find information most useful and interesting?
   a) at a Project level (eg 'The Brown Treecreeper Conservation Project')
   b) at a Property level (eg progress on meeting conservation goals for Carnarvon Station Reserve)
   c) at a Regional level (ie information about all the properties in a bioregion)
   d) at a National/Organisation level.

9) Are there certain types of information that would increased your confidence that Bush Heritage's conservation objectives are being met? Can you give examples of the kind of information you would find useful and describe why you would like to receive this information?

10) Would you find information on the social aspects of Bush Heritage's work useful? (eg information about the organisations it is forming partnerships with; the people who do volunteer work; the affect Bush Heritage is having on raising community awareness and education; the kinds of visitors who are coming to Bush Heritage properties).

'Presentation of Information' questions

[Use the mock information products to ask the following questions]

11) Do you have a preferred style for presentation of conservation information?

    a) Can you give us your reasons for this (eg easier to interpret)?
        i) photos/pictures
        ii) text
        iii) statistics, graphs
        iv) maps

    b) Would you prefer a simple "story" which explains the conservation outcomes achieved, or would you prefer more detail such as pertinent modelling results (perhaps use the information hierarchy diagram to help with this question)

    c) How much "context detail" would you like included to help explain the conservation outcomes (ie objectives, rationale, inputs/outputs)

12) Would you like conservation reports to cover a large time period (e.g. the past 5-10 years), or concentrate on most recent achievements (eg this year), or also include predictions for the future?

13) Are you interested in being part of the reference group for product development? This would involve a minimal amount of your time, and would provide valuable feedback on the impact and effectiveness of our reporting product.

[end of questions]

APPENDIX II – PRODUCT MOCK-UPS

Eight mock-up products were used to elicit user preference for content and presentation. These were prepared as one-page 'brochures' and were designed around 4 issues reported at Level 3 and Level 4 of the Information Hierarchy. They are (in order of presentation):

Issue	Description
Improving bird communities	Information and monitoring results for measuring improvement in bird communities at Kojonup Reserve, as a measure of biological integrity. Level 3 presents theory of body weight vs population density as a measure of integration.
Increased viability of malleefowl	Information and monitoring results for measuring increased population viability of the vulnerable malleefowl at Charles Darwin Reserve. Level 3 presents modelled population viability analysis (PVA) results
Improved water quality	Information and monitoring results for measuring improved water quality at Natural Springs, Carnarvon Station Reserve. Level 3 presents charts of water quality indices and levels and Level 4 uses maps.
National biodiversity impacts	Information and results for measuring national biodiversity impacts of Bush Heritage's investments and management actions. Level 3 introduces the concept of a scorecard, and Level 4 introduces economic and social measures.

Improving Bird Communities – Level 3

Improving Biological Community Integrity Kojonup Reserve

The level of integration of bird communities at Kojonup Reserve is higher now than it has been for the past 10 years, and this indicates a healthier and more resilient landscape.

What are 'Integrated Communities'?

Integrated communities are a measure of how well a landscape is functioning. A functional landscape is one in which the important ecological processes such as natural selection, predation and dispersal are occurring, and is healthy and resilient to disturbance.

Threats to Bird Communities at Kojonup Reserve

One of Bush Heritage's biodiversity objectives at Kojonup Reserve is to maintain functionally integrated bird communities - communities that are healthy and resilient. Kojonup Reserve is potentially habitat for 80 species of bird, however land management practices, particularly vegetation clearing and sheep grazing have degraded the habitat for birds. Between 13-16 bird species are now considered rare or threatened, and are declining in the landscape.

Management Actions Carried Out by Bush Heritage

More than 80ha of the reserve has been rehabilitated by replanting shrubs and native grasses, and boundary fences have been improved to ensure exclusion of stock.

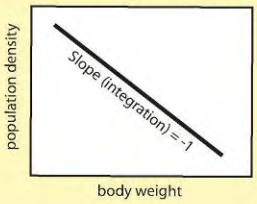
Assessing Bird Community Integration

New research has shown that the slope of the graph of population density versus body weight is a robust indicator of integration. A slope of negative one indicates an 'excellent' level of community integration. Increasing slopes indicate diminishing levels of community integration.

Ranking Categories

Slope of Graph	Index Ranking
-1	*Excellent*
- 0.5	*Good*
0	*Fair*
+ 0.5	*Mediocre*
+1	*Poor*

Community Integration



Improvement in Bird Community Integration Ranking

The degree of bird community integration has increased over the past 10 years from a "poor" ranking to an "excellent" ranking. With continuing land managment activities carried out on Kojonup Reserve, bird communities are predicted to remain healthy, integrated and diverse.

Impact of Management on Bird Communities

Bird communities on Kojonup Reserve are now more integrated, diverse and healthy. More than 50 species of birds have been observed, including the jacky winter, scarlet robin and regent parrot which are all threatened species. This means that the landscape is functioning more effectively, and has greater resilience, which benefits all the plant and animal species at Kojonup Reserve.

Bird communities L3 V2.3

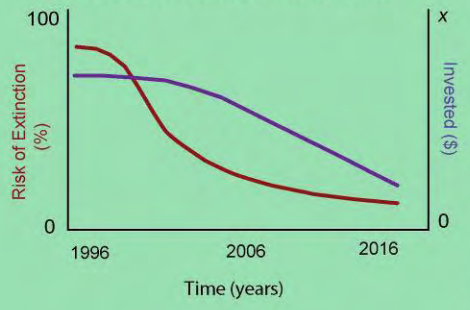
Improving Bird Communities – Level 4

Increased Viability of Malleefowl – Level 3

Increased Population Viability of Malleefowl at Charles Darwin Reserve

The risk of extinction of Malleefowl populations in and around Charles Darwin Reserve has decreased significantly over the past 5 years, and is expected to decrease in the future with continued investment.

Cost of Reducing Extinction Risk



Increased Malleefowl Population Numbers

In the 10 years since Bush Heritage has bought and managed Charles Darwin Reserve, the risk of extinction of the Malleefowl populations has decreased substantially. In addition the risk of extinction over coming years is predictedto continue to decrease.

This risk can be evaluated relative to the estimated management costs involved. The graph shows the ongoing cost needed to ensure population viability which continues to diminish into the future.

The data has been modelled using a technique called Population Viability Analysis (PVA). PVA enables an estimate of the size of a population that is required for a particular species to persist.

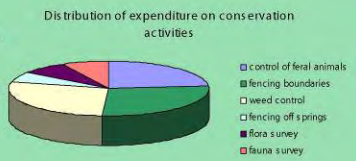
Status of the Malleefowl

The Malleefowl (*Leipa oceallate*) is a shy, ground-dwelling bird which is listed as nationally Vulnerable in the EPBC Act (1999), due to predation by feral animals, habitat loss and degredation. Population numbers in Charles Darwin Reserve were very low and without action had a high probability of becoming locally extinct. In response, Bush Heritage formulated the objective "to maintain and increase the numbers and viability of Malleefowl populations in and around Charles Darwin Reserve".

Management Actions

Bush Heritage worked with surrounding properties in a joint effort to conserve Malleefowl numbers, through:

- Acquisition of 68 600 hectares of land
- Rehabilitation of 20 000 hectares of land
- Reduction in feral animal populations by 50%



Malleefowl L3 V2.3

Increased Viability of Malleefowl – Level 4

Increased Numbers of the Vulnerable Malleefowl at Charles Darwin Reserve

Over the past 5 years, Malleefowl have been substantially increased from a dangerously low level, and populations of this vulnerable species are now flourishing due to the efforts of Bush Heritage staff and volunteers.

Status of the Malleefowl
The Malleefowl (Leipa oceallate) is a shy, ground-dwelling bird which is listed as nationally Vulnerable in the EPBC Act (1999), and is considered as a species which is "rare or likely to become extinct in WA". In response Bush Heritage formulated the objective "to maintain and increase the numbers and viability of Malleefowl populations in and around Charles Darwin Reserve.

Management Actions
Bush Heritage is working with surrounding properties in a joint effort to conserve and rehabilitate suitable Malleefowl habitat, and reduce the threat from feral predators such as cats and foxes. 10 000 ha of land suitable as habitat for Malleefowl has been acquired by Bush Heritage, and cat and fox control programs have been implemented.

Increased Malleefowl Population Numbers
The Malleefowl populations are now thriving in Charles Darwin Reserve, and their abundance is also increasing on surrounding properties. The increased number of Malleefowl means that the populations are now more viable, and have a much greater chance of persisting in the coming years.

Reserve Managers Joe and Mary Smith are enthusiatic about the change:
"*In the five years that we have been managing Charles Darwin Reserve, we have gradually seen more active malleefowl mounds, and we and our young son still get a thrill when we catch a glimpse of the elusive birds. It's rewarding to know that everyone's hard work is paying off - that the feral animals are decreasing and the land is becoming healthier and able to support species like the Malleefowl.*"

Malleefowl L4 V2.3

Improved Water Quality - Level 3

Improved Water Quality at Natural Springs Carnarvon Station Reserve

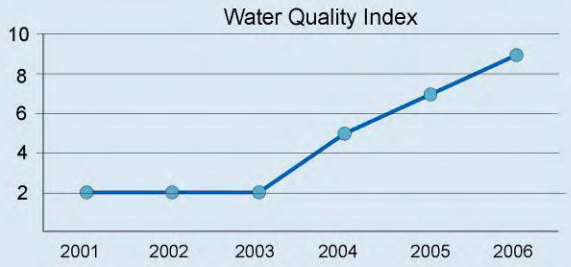
Objective: To restore vegetation cover and water quality to levels expected under grazing by only native species.

The Importance of Springs on Carnarvon Station
There are 22 permanent or semi-permanent natural springs located in Charles Darwin Reserve, and they are a rare and spectacular feature of the Reserve. The availability of water shapes the assemblages of fauna for some distance around as well as houses oases of aquatic life that add to the diversity of fauna and flora in all corners of the Reserve.

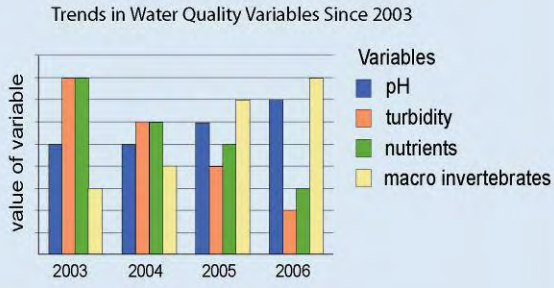
Management Actions to Counteract Threats to the Springs
The major threats to the health of the natural springs and surrounds are feral animals using the springs, trampling the vegetation and causing soil erosion. As a result, all of the springs are degraded to some extent. Bush Heritage implemented three management strategies: feral animal control, monitoring program, and fencing. Animal control involved trapping of cane toads and restriction of pigpopulations. The monitoring program focused on measurement of water quality at the springs, and recording of feral herbivore numbers. Fencing of all springs and dams were completed.

There has been a marked improvement in water quality, and this has already led to increased vegetation cover and and condition around the springs as well as increased use of the springs by small native mammals.

Water Quality Rating
Water quality has improved in terms of index rating from a score of 2 to 9 as a result of strategic management actions. The index is constructed from variables such as turbidity, nutrients, macro invertebrates, and pH. These variables are numerically combined to form a single number rating of water quality of the springs. The rating is scaled from 0-10, where 10 is the highest quality water.



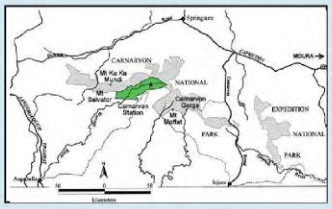
Water Quality Criteria
The graph of the variables by which water quality is determined shows their individual trends since 2003.
- Turbidity is an indicator of the amount of dissolved particulates in the water caused from erosion. Lower levels are better.
- Nutrients are an indicator of distubance of the springs and animal faecal material. Lower levels are better.
- Macro invertebrates refers to the diverse range of tiny 'bugs' that live in the water. The type and number of these organisms is an indication of improved water quality.
- pH is a simple measure of the acidity of water. A value of 7.0 is regarded as neutral, lower values as acidic, and higher values indicate alkaline waters.



Water quality L3 V2.3

Improved Water Quality - Level 4

Improved Water Quality at Natural Springs Carnarvon Station Reserve



Objective: To restore vegetation cover and water quality to levels expected under grazing by only native species.

The Importance of Springs on Carnarvon Station
The number and variety of permanent springs is a rare and spectacular feature of the Reserve. The availability of water will shape the assemblages of fauna for some distance around as well as house oases of aquatic life that add to the diversity of fauna and flora in all corners of the Reserve. There are 22 permanent or semi-permenant natural springs located in the Reserve, and it is likely that further springs will be identified.

Threats to the Condition of the Springs
All of the springs are currently degraded to some extent, due to grazing by hard-hoofed animals such as wild pigs. The major threats to the health of the natural springs and surrounds are feral animals using the springs, trampling the vegetation and causing soil erosion.

Management Strategies
Bush Heritage undertook three managment strategies: feral animal control, monitoring program, and fencing. Animal control involved trapping of cane toads and restriction of pig populations. The monitoring program focused on measurement of water quality at the springs, and recording of feral herbivore numbers. Fencing of all springs and dams was completed.

There has been a marked improvement in water quality, and this has already led to increased vegetation cover and condition around the springs as well as increased use of the springs by small native mammals.

Water quality L4 V2.3

National Biodiversity Impacts – Level 3

National Biodiversity Impacts of Bush Heritage's Investments and Management Actions

Over the past decade, the strategic management activities of Bush Heritage have resulted in substantial and positive impacts on biodiversity.

Overview of Bush Heritage's Achievements for 2006

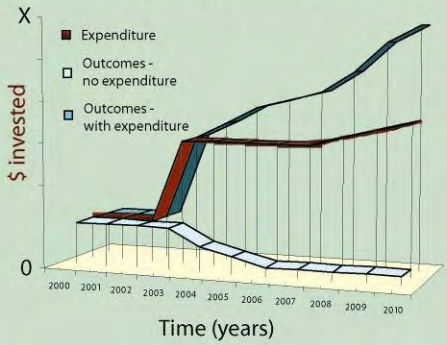
Bush Heritage has four principal biodiversity objectives, namely maintentance of population viability, functionally integrated communities, essential ecological processes, and conservation of significant species. Three out of four biodiversity objectives have achieved dramatically improved outcome ratings over the past year. Conservation of significant species has had a stable trend; with additional funding channelled into this objective in the next 5 years the trend is expected to increase. Outcome ratings are based on the national average condition or level of each objective. Nationally, Bush Heritage properties are now protecting X threatened vegetation communities, Y threatened floral and faunal species, and Z nationally significant native ecosystems. This represents a significant proportion of Australia's biodiversity. Management plans have improved the resilience and viability of the properties, ensuring brighter prospects for the future.

Outcome Scorecard

National Objective	Expenditure	Outcome Rating	Trend
1. Viability of priority populations	Static	B	↑
2. Functionally integrated communities	Increase	A+	↑
3. Essential ecological processes	Increase	C+	↑
4. Conservation of significant species	Decrease	B	—

↑ Improvement in Condition
— Stable

Expenditure vs. Reserve Biodiversity Outcomes

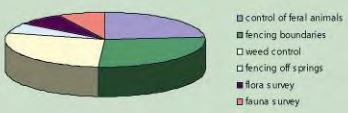


Biodiversity Outcomes relative to Expenditure

This 'trajectory curve' shows that while expenditure has remained fairly constant over the period (excluding the initial investments), the benefit of measured outcomes continues to grow. These outcomes are measured as progress towards the organisational conservation objectives, identified in each of the reserve management plans. This progress is measured using specific indicators for each key objective. Based on comparative information from areas adjacent to Bush Heritage reserves, a "do nothing" trajectory can be drawn illustrating the decline in conservation outcomes over time if no management actions were taken. These outcomes are based on information collected by the Bush Heritage 'Outcomes Monitoring and Evaluation Program'.

Comparison between grazed land (on the right) adjacent to Bush Heritaged managed land (on the left).

Distribution of expenditure on conservation activities



AUSTRALIAN BUSH HERITAGE FUND

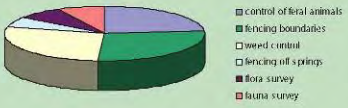
National L3 V2.3

National Biodiversity Impacts – Level 4

National Biodiversity Impacts of Bush Heritage's Investments and Management Actions

Over the past decade, the strategic conservation management activities of Bush Heritage have resulted in substantial and positive impacts on biodiversity.

Distribution of expenditure on conservation activities



Overview of Bush Heritage's Achievements for 2006

Bush Heritage has achieved dramatically improved outcome ratings forthree out of its four biodiversity objectives. The fourth objective is predicted to improve with additional funding over the next five years. Nationally, Bush Heritage properties are now protecting X threatened vegetation communities, Y threatened floral and faunal species, and Z nationally significant native ecosystems. This represents a significant proportion of Australia's biodiversity. Management plans have improved the resilience and viability of the properties, ensuring brighter prospects for the future.

Current Properties Owned and Managed by Bush Heritage

Clockwise from left: Shield bug, Reedy Creek Reserve (Qld); wildflowers, Eurady Reserve (WA); Yellowjacket, Carnarvon Station Reserve (Qld); gecko spp, Carnarvon Station Reserve (Qld);

National L4 V2.3

CHAPTER 4
VISION AND SCOPE FOR THE ABH REPORTING TOOL

Rebecca Letcher and Susan Cuddy

PROBLEM STATEMENT AND NEEDS IDENTIFIED

The Increment project aims to provide and report greater accountability and information on conservation outcomes resulting from strategic activities supported by investment in the private nature conservation sector, using ABHF reserves as pilots to test the development of a set of tools. The tools developed aim to use a sound program logic including evidence-based reporting to demonstrate management effectiveness in achieving conservation outcomes. One of the core goals of Increment is to increase confidence in the private conservation sector by providing donors with information relating to conservation outcomes that have been achieved as a result of investment in on-reserve management activities. Phase 1 of this project has focused on scoping the reporting tool component of Increment. This has involved a comprehensive literature review of reporting options including consideration of the industry standard as well as development of a conceptual framework for reporting which considers actions, outputs and outcomes. In addition, interviews of potential end-users of the tool have been conducted and their responses documented. This chapter focuses on the final stage of scoping – synthesizing results from the interviews and other contact with ABH staff to identify a vision and scope for the reporting tool that encompasses the needs of priority end-users. This is intended to be used to allow Australian Bush Heritage to move forward towards a more specific design phase. Steps required to move forward to this phase are identified at the end of this document. Before these can be understood the objectives and requirements of the tool are detailed and a conceptual design which meets these is outlined for the tool.

OBJECTIVES FOR THE REPORTING TOOL

Several objectives have been stated for this reporting tool. These can be divided into the primary objective and secondary objectives.

Primary Objective

- To develop a reporting framework and related tool to increase the confidence of donors in ABH activities

Secondary Objectives

- To develop a tool for reporting outcomes of biodiversity conservation activities which is able to be used by a broad range of end users including ABH, other conservation groups and Australian Government organizations;
- To aid in refining objectives and goals and measuring the achievement of these through outcomes.

Several possible objectives have also been ruled out for the reporting tool following discussions with ABH staff. These objectives will not be addressed by the tool. These are:

- To allow management of ABH properties;
- To enable the selection of properties to be purchased;
- To enable project management or planning activities.

VISION

Australian Bush Heritage staff have expressed the following vision for the Reporting tool:

- It should increase the confidence of potential donors in ABH investments by providing scientifically based information on outcomes achieved;
- Information from the tool on ABH outcomes and activities should be accessible and meaningful to a range of donor types including philanthropic organisations, small donors and Australian governments;
- It should be capable of being used for reporting on a wide range of biodiversity conservation activities such that it is adopted as an industry standard by biodiversity conservation organisations;
- It should be able to incorporate data and goals across a broad range of spatial scales including property, regional and potentially national scales.

INFORMATION STAKEHOLDER REQUIREMENTS

End-user needs for the reporting tool have been scoped using interviews of examples of key end-users as well as through discussions with ABH staff. The end-user requirements identified during these interviews are summarized in Table 10.

Table 10: Summary of needs and preferences identified in stakeholder workshops

Stakeholder	Scales	Include social information?	Story needs	Information forms	Time	What should be measured?	Other comments
Reserve manager	Project and property level for making decisions relating to own management Bioregional and national to understand how reserves fit together and what their impact is	On engagement and interactions with local communities around reserves	Should be quantitative and include reasons why outcomes occurred	Include information on experimental design, sampling strategies and rationale Photos, maps and charts all good	No future predictions, should include long term monitoring	Actions, outputs and outcomes	No comparison photos with neighbours as these would be alienating
Australian Government NRM team	All scales, not necessarily aggregated to national scale; needs to report at bioregional levels	Need to know value for investment not just final outcome	Need to know how data was collected Relate works undertaken to improvements; should report on negative and unsuccessful outcomes as well as success stories	Use national categories and national measures and standards; need to be able to access lower level data not just score cards; spatial presentation important; graphs should show data over time		Value for dollars invested	Peer review and consistency of data over time is very important
CMA	Need to match hierarchy of scales used within the CMA	Some information can be good but can also be expensive and not very useful	State assumptions behind measures and test these; reserve manager narrative good to include	Should align with Matters for target	Annual, 5 year and 30 year periods; historic not predictive	Actions and outputs, compare $/ha between programs	
Small donors			Purchase criteria for properties; half participants required data supporting claims, others did not want this; don't want cost information mixed in with reporting on ecological outcomes	Map of location of property and local context; provide more interpretation and context on maps; before and after photos and time elapsed	Timeframes should be included for all data, dates on all photos	Problems, actions taken and successes to date key areas	Generally satisfied with level of information currently provided; no interest in scorecard approach; use of language is very important – simple English, no acronyms
ABH ecology team	Not national level – data not sufficient and not part of ABH objectives		Must use correct terminology – use this as a means of educating people not dumbing things down.	Quantitative; web reporting would be good			

Several levels of use were identified for the tool in discussions with ABH staff:

- Users external to ABH to use information provided by the tool on achievement of outcomes by ABH to evaluate their conservation investment decisions, particularly the decision to invest in ABH activities;
- Users external to ABH able to use a generic shell of the reporting tool to evaluate and report on their own activities;
- Users internal to ABH able to use the tool to broadly evaluate internal decisions and for other broad internal reporting needs.

The highest priority use of the tool identified was for users external to ABH to evaluate their investment decisions particularly their investment in ABH activities. Access to the generic shell by external users was a closely related use which was also seen as a high priority. Internal uses for the tool were seen as lower priority. Internal uses at a smaller scale, for example to assist in property management or to design management activities to undertake on a property, were seen to be outside the current scope of the reporting tool.

Broad requirements for the tool which have been identified are that:

- It should be stand alone, easily accessed and based on a publicly accessible framework;
- It should incorporate two components: a generic shell that can be used by a variety of organizations for biodiversity conservation reporting; and an implementation of the generic tool to ABH including specific ABH data on inputs, outputs and outcomes as well as assessment of outcomes against ABH goals and objectives.
- The ABH implementation should be able to be used to demonstrate the value of decisions to external users.

These are very broad requirements for the tool. Many specific technical requirements can also be identified at this stage. These include the phases of reporting, data formats which need to be supported by the tool, specific types of outputs and visualizations which are required and other components.

Phases of Reporting

Reporting is intricately tied in with property or project lifecycles. The main stages encountered by ABH in managing a property are: 1) acquire property; 2) assess property needs; 3) implement, assess and report on management outcomes. Different people need to input data at each stage and different types of data need to be included. While these stages explicitly relate to ABH property management they can be made more generic to allow the reporting framework to better fit a wider range of situations. In general any organization planning a management activity will require three similar stages of reporting:

1. establish background for the asset being managed;
2. assess the needs of the asset and establish a baseline;
3. implement, assess and report on management outcomes.

In this way the framework can be seen to be relatively generic.

1. Establish background for asset being managed (acquire property)

It has been assumed that the process of acquiring the property does not depend on reporting tool outputs – that is, there is an assessment and prioritization process that occurs

independent to the tool. This assumption relates back to the objectives of the tool outlined at the start of this document. During this phase background data is the main type of data to be incorporated into the tool. This would include maps of position and context, information used to justify buying property (or managing an asset) in first place. For example this might include a statement of issues and property level of objectives as well as evidence of these. A staff member internal to ABH would need to be identified to be responsible for data input during this phase.

2. Assess the needs of the asset and establish a baseline (assess property needs)

During this phase the main information input to the system would be baseline data. This would include photos of "Before" condition, monitoring information on existing biodiversity and condition, dates when data/photos taken and method of collection and the property manager's overall statement of condition. Also goals and objectives for the property (or asset) might be refined now and strategies for achieving these goals defined. It may also be necessary to record at this stage expected costs associated with these strategies. Within ABH the property manager and ecologists would need to be able to add and review data during this phase.

3. Implement, assess and report on management outcomes

This is the 'on-going' phase of the property or asset life cycle. During this phase users would need to be able to provide information on biodiversity and condition on regular (say annual) basis. Data incorporated would need to include photos of locations previously photographed in the 'before' sequences, updates of indicators or other monitoring data previously collected, new information on condition and biodiversity. An overall progress statement from the property manager is also required for each year. Goals and objectives need to be revisited and new strategies need to be able to be developed and costs for these projected. Actual costs experienced for each year need to be accounted for versus budgeted costs.

For many of the organization's goals the need is to evaluate all properties (or assets) across the range of organizational goals and objectives. For other stakeholder organizations this will need to allow comparison with their individual goals and objectives. Information needs at this broader scale relate to assessments of the value of the property in achieving organisational goals and objectives; the ability to revise goals and objectives over time, and background data required to assess the value of a property to the bioregional or other regional scale.

Data

During each phase several types of information are required:

- Photos of the same location, data and location details are required
- Summary of experiences and observations by the property manager
- Monitoring data
- Revised goals and objectives
- Revised strategies and budgeted costs
- Actions undertaken and real costs associated with these (include in-kind and time resources as well as monetary resources)

- Report on mechanisms used to link with local community, perceived outcomes and any measured data or information on successes or failures
- Summary scores for actions, outputs and outcomes – question is whether this is created independent to the property manager, using an objective measure or using subjective means (eg. Independent ranking by others within organization). In any case a set of criteria need to be developed for scoring various attributes.

Information provided which does not relate to time periods is mostly part of the background data nevertheless it may need to be reviewed and revised regularly as situations change. This includes:

- Maps of location and context of property
- Information on monitoring and evaluation program design, appropriate sampling periods etc
- Classifications for the property to allow linkages to higher aggregation data – eg. Bioregion, State, other region (CMA, LGAs).

Other requirements on the tool relating to data:

- System should identify who is adding information and link their name to data provided.
- Data needs to be able to be input from remote locations and automatically updated.

Visualisation of Inputs, Outputs and Outcomes

Potential end-users preferred many different visualization formats for different situations. These included map based outputs which include interpretive components and comprehensive labeling, charts and figures displaying outputs, access to underlying data, photos, especially before and after photos where features are identified and interpreted and these are data and time stamped to allow comparisons, scorecards for assessing overall impact and dialogues from key observers such as property managers. Users identified a mix of reporting styles as most desirable from purely quantitative, to interpretive and qualitative information. The reporting tool must allow for these different styles of reporting and hierarchical access to results. That is, users should be able to first access aggregated and interpreted results but should also be able to successively access more detailed, analytical results and information.

Conceptual Design of the Reporting Tool

The objectives and requirements of the tool outlined above lead to a conceptual design of the reporting tool as shown in Figure 18. The tool is shown to have 3 main components: data input; analysis tools; and, an inference map. The data input component must allow for goals and objectives to be input as well as information pertaining to inputs and outputs. This component will require an interface that allows property managers and ABH ecologists to input various types of qualitative and quantitative information as described above. ABH also need to resolve whether or not there are others within or outside the organization who will be able or required to input data into the system. These users may require a separate interface or may be able to work directly with the interface used by ecologists and/or property managers.

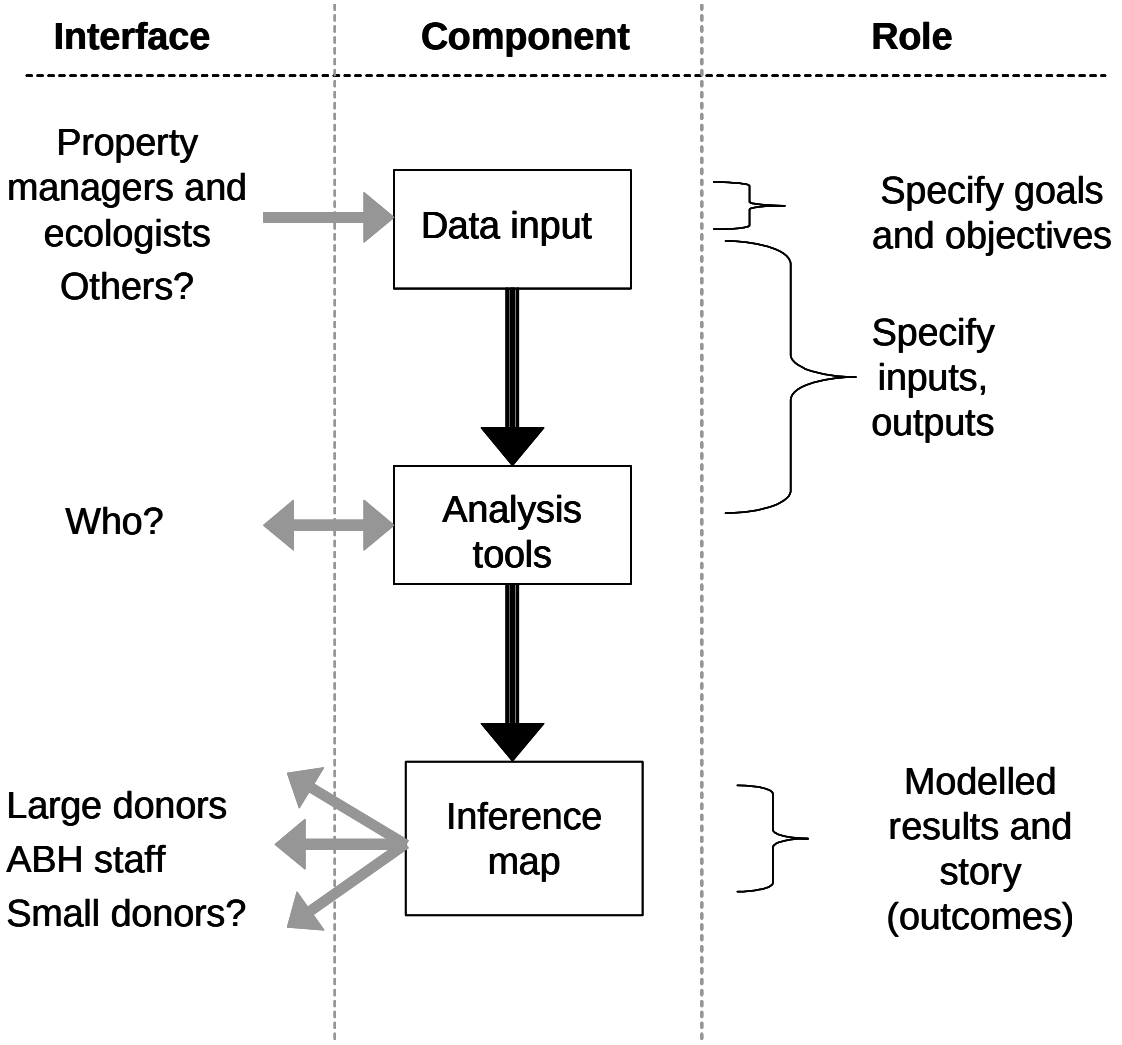


Figure 18: Conceptual design of the reporting tool

Note this structure relates directly to the conceptual framework for the reporting tool. The data input component relates to Level 1, or raw data collection (and collation). The analysis tools enable Level 2 information (ie. analysed results) and may also enable some Level 3 information (modelled results). The inference map relates to higher order Level 3 information and enables Level 4 information (story or narrative).

The second component relates to the analysis tools within the reporting tool. These might include statistical techniques or other codes used to aggregate or interpret input data to determine the nature of inputs or outputs in the reporting framework. For this component the interface will likely be needed to allow information and assumptions to be input into the system as well as allowing results to be output (thus the two direction arrow to interfacing). These tools will allow the inputs and outputs components of the reporting framework to be fully specified. The question remains who should or would want to be able to interact with this component of the reporting tool, within and external to ABH. This question needs to be resolved before ABH can move on with design and implementation of the reporting tool. For example if the needs of large donors to 'dig down' into the underlying data are to be met (not just to view aggregated information on outcomes) then large donors including Australian Government organizations may need to be able to access results from this component of the tool.

The final component of the reporting tool is the inference map. This essentially relates inputs and outputs to outcomes. It produces modelled results and a 'story' of outcomes resulting from actions undertaken. For example a score card approach might be utilized in this component. Outputs from this component will be the most widely used and reported and may need multiple interfaces or access schemes to be developed. For example ABH staff may need to be able to directly interrogate the system at this level while small donors may only receive information filtered from this tool and placed on a static website. Large donors including Australian government organizations could be allowed access in a variety of ways depending on the preferences of ABH.

Importantly there needs to be multiple interfaces to the tool that allow for the needs of different types of users. These include the interfaces to allow data input during Phases 1 and 2 as well as multiple interfaces to allow users to access and visualise data on outcomes, inputs, outputs and actions. These interfaces are required because the reporting needs of these users are very different. It should be noted that not all 9or any) interface must consist of a dynamic software solution. For example a reasonable interface for small donors might be considered to be regular updates of the existing website with improved information on outcomes which has been generated by the Reporting Tool and manually input into the website using current update procedures.

IMPLEMENTATION ISSUES

This vision and scope document has raised several questions that need to be considered before ABH can move on with designing and implementing the reporting tool.

1. Who else, other than property managers and ecologists, needs to interface with the data input component of the reporting tool?

2. Who within ABH would be expected or required to interface with the data analysis tool component of the reporting tool? For example who will undertake statistical analysis of data that has been input into the tool and enable this to be used to assess outputs with the inference tool? Who will be able to do this? Who (if anyone) will be required to do this (eg. to ensure basic analysis required for reporting is undertaken)?

3. Will large donors be able to access information from the analysis tools and data input components or only from the inference map? How (if at all) will their access to results from the inference map be limited?

4. Who will be allowed high level, dynamic access to the results of the inference map? Who else will be able to view results from the inference map? How will this access be limited?

In developing a detailed design specification ABH will need to consider many things. Such a specification should consider issues such as:

1. maintenance of the reporting tool;

2. upgrades and management of releases;

3. support for the tool, and the level and method or delivery for such support;

4. currency of data in the system and development of a data management strategy;
5. interchange between organisations and potential data sharing; and
6. tools needed to maintain or ensure internal consistency of the data.

In addition if the primary objective identified here is to be met (ie. delivery of a generic tool able to be used by a variety of organisations) then additional factors much be considered, including:

1. the commercialisation process or program to be used,
2. evaluation of the tool and measuring success,
3. promotion and advertisement of the tool's features and functionality, and
4. critical partnerships that should be formed to enable to implementation of the tool and commercialisation process.

NEXT STEPS

In order for the reporting tool scoped here to be developed a detailed design specification must first be developed. However this should not be developed until ABH have had a chance to approve the design scope outlined in this document. Key steps in implementing design of the reporting tool are:

1. ABH must review, revise and approve the design scope document to ensure that the scope and vision identified is in line with their requirements. Questions of ownership and responsibility within ABH must be addressed as part of this process including those outlined in the previous section.
2. Using the scope and visions document invite relevant IT design organisations to tender for the task of designing a solution within the budget of ABH which best meets the needs identified here.
3. Choose an IT design organization to undertake design and development. This may be in-house IT providers.
4. Develop a detailed design specification with the IT design organization.
5. Implement, test and refine the detailed design specification.

GLOSSARY

Word	Definition	Synonyms
Action	Operations or work processes internal to an organization, intended to produce specific outputs.	activity
(M&E) Approach	A specific process, which is generally accompanied by a series of steps or guidance. The primary distinction between approaches lies in the steps that comprise the approaches, not in the (type of) data that feed into them.	
Assessment	Used here synonymously with 'evaluation'.	evaluation
Benchmark	The value for an indicator that has some defined environmental significance (scientific) or the value for an indicator that demonstrates achievement of best practice (corporate).	
Conceptual framework	A representation of cause-and-effect relationships in a generic fashion.	
Conservation success	The achievement(s) of the program, either generally in terms of the cumulative impacts of inputs, actions, outputs, and/or outcomes, or referring to one of these components (where specified).	conservation success, conservation achievement, management effectiveness
Effect	The impacts of management actions without reference to a particular objective or benchmark.	
Effectiveness	The impacts of management actions with reference to a particular objective or benchmark.	
(Management) Effectiveness	The extent to which an organisation or program is achieving its objectives.	performance
Efficiency	The extent to which outcomes are maximised for a given level of outputs (or inputs minimised for a given level of outputs/outcomes).	
Evaluation	The use of monitoring results to judge or calculate the effect of actions relative to a particular outcome or objective. This involves assessing whether the project is achieving, or has achieved, what it set out to do, and how successful the project is.	
Evaluation framework	A representation of the management processes and expected results to be considered in an evaluation.	
Goal	The broader desired state to which the project contributes (ultimate goal, long-term vision) or "a general summary of the desired state that a project is working to achieve"	mission, vision, aim
Impacts		outcomes
Inputs	Resources that are the project's raw materials (a subset of outputs) that are used to produce outputs.	
Monitoring	The collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective.	
Objectives	An outcome-oriented statement of what a program or project is intended to achieve. They are linked to government policy and form the basis for performance reporting.	
Outcome	All the impacts or consequences of a program as a result of direct actions and outputs with respect to the objectives.	impacts
Output:	The quantified results of actions (e.g. output: 10km of fencing put up; action: fencing threatened habitat) – the 'products and services' which are produced and delivered by a program's actions. Sometimes more broadly described to also encompass inputs and methods: the proximate step(s) towards a goal.	
Process	Used synonymously with 'actions' in this report.	actions

Word	Definition	Synonyms
Programme	In this report the word 'programme' is used to refer to all conservation projects, including government departments, corporations, non-profit donor based organisations, and community groups.	
Purpose	What the project, within the time frame and resources available, should achieve.	target
Reporting	Is the documenting of results of monitoring activities and evaluations, and presentation of these results to inform others about the project achievements.	
(Conservation) Return	Refers to a success which is measured ideally by evaluating outcomes against the objective(s).	benefit
Stakeholders	People that will be affected by, or will influence a programme, project or action.	
Targets	Quantifiable levels or ranges to be met at a specified future date, often in the form of specific statements defining the state or condition of a biodiversity component (e.g. species, habitat type, or ecological phenomenon) that the conservation project wants to influence through some intervention.	
Tool	An instrument that aids in the actual undertaking of M&E activities. Therefore, a reporting tool is an instrument that aids in the actual undertaking of reporting activities. More than one tool can be used in a reporting approach.	

ACRONYMS

Acronym	Meaning
ABH(F)	Australian Bush Heritage (Fund)
ANU	Australian National University
ANUE	ANU Enterprise (the business arm of ANU)
CATIE	Agricultural Centre of Tropical Investigation and Teaching
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (now Department of Environment and Water Resources)
IUCN	World Conservation Union
L&WA	Land and Water Australia (Land and Water Resources Research & Development Corporation)
M&E	Monitoring and Evaluation
MER	Monitoring, Evaluation, and Reporting
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
TNC	The Nature Conservancy
WCPA	World Commission on Protected Areas
WWF	World Wide Fund for Nature

Measuring and Reporting on Investments to Achieve Biodiversity Conservation Outcomes – a Review of Approaches

A Summary Report to the Australian Bush Heritage Fund

SM Cuddy, B Mackey and E Sobey

Integrated Catchment Assessment and Management (iCAM) Centre
The Fenner School of Environment and Society, THE AUSTRALIAN NATIONAL UNIVERSITY

iCAM Report 08/05

PROJECT: Increment – tool development and testing

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Foreword

In Australia, as elsewhere in the world, there is a growing demand to demonstrate return in terms of biodiversity outcomes of investment in biodiversity conservation programs. This demand reflects both the growth in, and increasingly competitive nature of, the conservation investment market, and the increasing maturity and main-streaming of nature conservancy bodies. The former demands the development and reporting of appropriate measures; and the latter requires the development and implementation of formal business and investment procedures and protocols.

In 2006, the Australian Bush Heritage Fund, an Australian nature conservancy organisation, undertook to identify measures and protocols suitable for their agency that would also serve as a generic framework for other Australian biodiversity conservation investors and investment brokers. The Australian Government, in line with its interests in achieving a sustainable and diverse landscape through rigorous and synergistic investment, and in building capacity within the conservancy sector, has directly supported this initiative through its Land and Water Resources Research and Development Corporation (Land and Water Australia).

The first phase of this project, conducted during 2006/07, was a design and feasibility study, including a review of candidate approaches to measuring conservation success. This study was conducted by a small team of natural resource management (NRM) researchers at The Australian National University and the results were published in Mackey et al. (2007).

This summary report synthesises that review and draws heavily on Mackey et al. (2007). It summarises its specification of measures and reporting needs, selection and assessment of candidate investment frameworks, and its recommendations and key findings.

Contents

Figures and Tables

Introduction

This report is a summary of a review of candidate frameworks to support reporting on biodiversity conservation outcomes by conservancy managers to potential and existing investors (including the Australian government). It is aimed at those interested in gaining insights into the range of approaches that exist or are in development to meet the needs of conservancy agencies to have flexible and rigorous investment frameworks to guide the conduct of their business.

To enable this report to be read stand-alone it contains the full set of references from the original study (Mackey et al, 2007). For more information on the cited approaches, the reader is referred to the original study and the primary material, most of which is available from international journals and published reports.

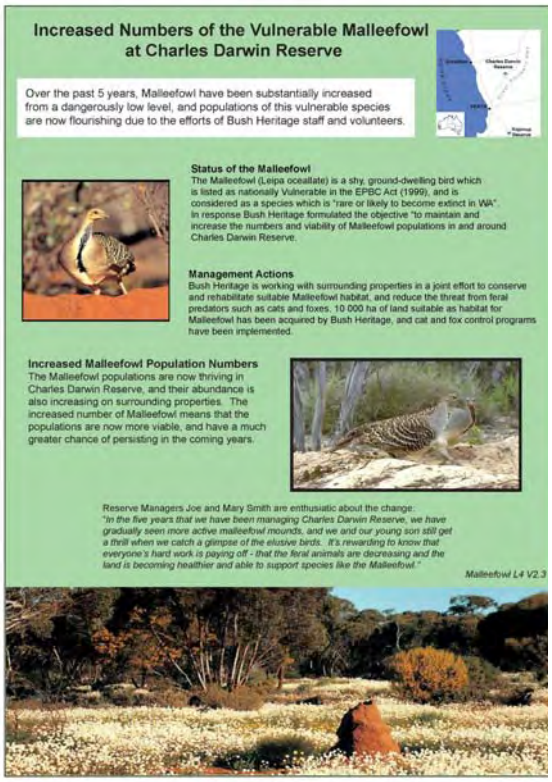
Stakeholder Needs

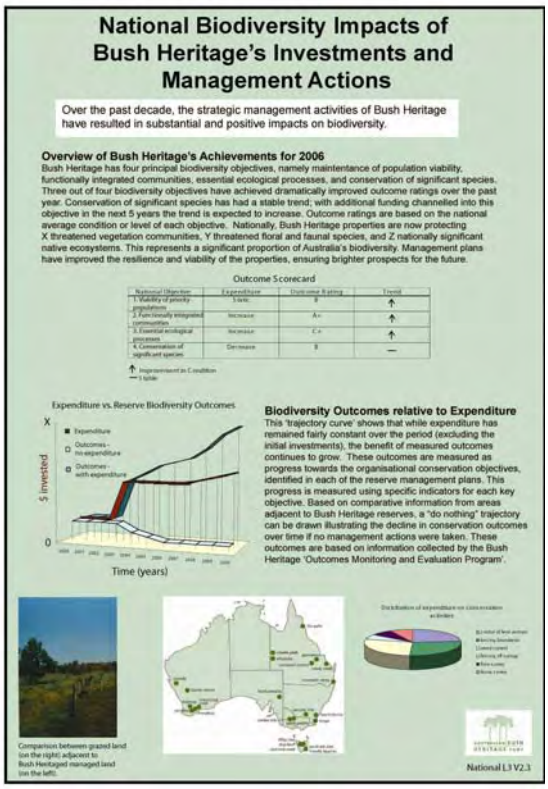
The style and content of reporting biodiversity outcomes from strategic investment is predicated on knowing what can be reported (appropriate measures) and what needs to be reported (knowing your audience). Adopting a well-defined investment and reporting framework provides the necessary structure for classifying the different processes and types (levels) of information that can be measured and thus reported. Conducting an analysis of potential and existing investors and interested people provides the specifics of what measures are required and in what form.

Initial engagement with stakeholders indicated that reporting on on-ground works and related activities, and against targets and desired outcomes (how the specific investments contribute to a great goal) were all important. Using an outcomes-based reporting framework such as the World Commission on Protected Areas (WCPA) framework, provides a standard approach to reporting these: it clearly identifies the logical components of the management process (inputs, actions, outputs, outcomes), and the linkages between them. It meshes nicely with an information hierarchy that distinguishes levels (degrees of transformation) of the information (raw data, results of analysis, modelled or ranked results, story or narrative) and provided a practical framework for eliciting stakeholder preferences.

For the two broad groups of information stakeholders that were identified – Investors (small donors and philanthropic investors[1] and government investors) and beneficiaries of information (other conservation non-government organisations (NGOs), natural resource management (NRM) agencies and internal[2]) – preferences for the reporting mix of components and levels of information were elicited. These were refined using a set of prototype reports. Two example reports using Level 3 and 4 information are provided.

[1] A threshold of $25 000 over three years differentiated small donors (below the threshold) from philanthropic investors.
[2] Internal refers to internal to the conservancy agency itself, such as property managers, researchers and program managers.





Reporting Needs

Measuring and evaluating conservation success is a difficult and complex task, due to the inherent complexity of the scientific concepts that underpin conservation management. In particular, the concept of 'biodiversity' is multi-faceted, and multi-scaled. Furthermore, there are difficulties associated with designing an approach that is logical, credible, cost effective, and practical. There are many issues associated with measuring conservation success, centring on the classical questions "what, why, how, where, when, and who". Asking such questions requires identifying what constitutes a conservation return (or success); and determining how to measure and evaluate this return.

Defining Conservation Success

Biodiversity refers to diversity at three levels: genetic, species and ecosystem (CBD 2002). Most conservancy agencies set goals or objectives associated with one or more of these levels. The Australian Government also has a number of 'aspirational outcome statements' that act as goals for their national monitoring and evaluation framework (NRMMC 2003): An example is "ecosystem services and functions are maintained or rehabilitated".

Some agencies (particularly NRM agencies) use targets for planning and reporting. These targets usually define an intended state or condition of a biodiversity element (eg a species) and are more specific than objectives. Reporting against targets is common. Reporting on how these targets support the achievement of desired outcomes is less common.

Measuring Conservation Success

There is an increasing need to demonstrate accountability and effective return on investment in the conservation biodiversity investment industry. These require rigorous and regular evaluations of performance, particularly to gain understanding as to whether conservation interventions are having their intended effect.

Success can be measured directly or indirectly. Both measures are best understood in terms of the logical components of the management process (Figure 1): In this logical structure, impacts are separated to highlight the difference between measuring 'effects' and 'effectiveness', the latter putting some sort of rating on the effects by considering the objectives.

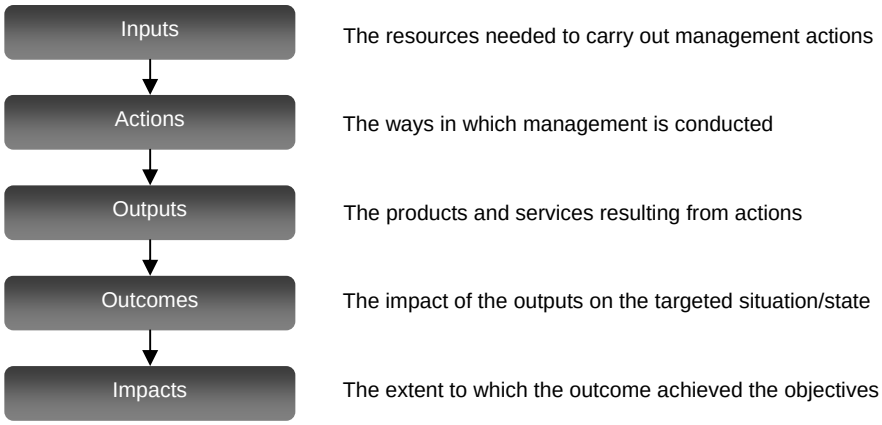


Figure 1, Logical components of the conservation management process

Direct measures of success involve measuring OUTCOMES. They measure what has been achieved in relation to stated objectives, as opposed to the activities that contributed to the success. Outcomes measurement should ideally relate to the conservation status of a biodiversity element, and would usually be measured using biological data. Typical measures are the 'population viability' of a focus species (quantified using attributes such as estimates of population size), trends in the distribution and abundance of selected species, and changes in the extent and condition of vegetation.

Overall outcomes measurement is not commonly used in assessment of conservation success. It requires long-term monitoring programs to collect the data and biodiversity response to management actions may be slow, complex and often not completely understood. This is why indirect measures such as information about threats, inputs, actions and outputs are commonly used.

It is argued that if the monitoring and evaluation approach is built on robust program logic, then inferences can be made about the likely effect of indirect measures on outcomes – that is, indirect measures may have a predictive capacity. Program logic refers to why activities are undertaken and the links between each component of the management cycle – if these links are based on strong, explicit, scientifically based relationships and assumptions, then this increases the predictive ability of each component in the program.

Measuring (a) pressures and/or threats, (b) the response or actions taken to alleviate this pressure and (c) the efficiency of this response is another approach. While theoretically appealing, quantifying pressures (eg the effects of intensive land use practice on properties adjoining a conservation reserve) can be difficult, as can the measurement of the response and effect due to the multitude of other potential explanatory variables that may impact the pressure and state components.

Measurement can also focus on management effectiveness. The IUCN/WWF Forest Innovations Project (Hakizumwami 2000) used a Participatory Rapid Appraisal approach which focussed on the evaluation of the current state, threats and policy environment (context) of the Dja Reserve in Cameroon (Africa), reserve system design and management planning (planning), the resources needed and available for management (inputs), and the way in which management was conducted (processes). While this was a relatively successful approach in identifying management issues that needed to be addressed in the reserve, on its own it would not be suitable to fully evaluate conservation success.

Coping with lag time

To circumvent to some extent the difficulties associated with lag-time between actions and response, 'stepwise' measures of success (intermediate level criteria rather than a single target or ultimate goal) are formulated. These targets are set in accordance with the lag-time phenomena with initial targets set relatively low and increasing exponentially with time (eg the Living Landscapes Program (WCS 2002)).

Another approach is the use of short-term indicators called 'Conservation Capacity Indicators" which reflect the capacity of the project to implement effective strategies at project sites. The Nature Conservancy follows this approach and uses seven indicators, assessed under the following five headings:

1. site leadership and support (leadership capacity and presence of a support team)
2. strategic conservation approach (strategic planning around conservation targets and threats, stakeholder analysis, and adaptive management and monitoring approach)
3. functioning conservation area and resource use zones (formal protection status, personnel and infrastructure and land use zone)
4. financial resources (current and long-term sustainable funding)
5. site constituency (level of stakeholder engagement and degree of stakeholder support).

These indicators are context (situation analysis), input (resource need and availability), and planning based, rather than direct measures of outputs or outcomes; hence they indicate the capacity of the project to achieve outcomes in the future.

Use of indicators

Indicators are commonly used as surrogate measures of status or trend. The most important point concerning their use in evaluation systems is that they should be chosen wisely (not because they are easy to measure), and must be directly linked to objectives. A number of programs have been developed to help reduce the use of inappropriate indicators, such as the Strategic Indicators Selection System (StratISS) (FOS n.d.), and World Bank Monitoring and Evaluation guidelines (World Bank 1998).

Data type: biological and social information

Traditionally techniques for measuring conservation success have focussed on quantifying biological information[3], ranging from counts of species richness and abundance, to measures of habitat quality and vegetation condition, as well as larger scale measures of landscape health using fragmentation indices. The importance of social information to provide a broader understanding of success is now acknowledged and efforts are being made to address the historical imbalance in data collection and quantification. Social measures include indices such as public support, inter-organisational relations, relevant values, attitudes and knowledge of key stakeholders, and trends in each of these variables.

Stem et al. (2005) state that the different types of data have different uses, and that it is "important to [...] know when it is most appropriate to use each of them. [...] Quantitative data [such as biological data] are particularly useful for showing trends or comparing sites and strategies, whereas qualitative data [such as most social and process data] help to explain the context of those trends."

Temporal resolution

Measurement of outcomes should ideally commence before any biodiversity actions occur to provide a baseline set of data against which to assess performance. Measurement should also continue long after actions have finished because of lag-time in response.

The Nature Conservancy PROARCA/CAPAS Monitoring Strategy for Protected Areas in Central America conducts a management effectiveness assessment every 6-12 months on an ongoing basis, which generally begins at the establishment of a protected area and continues theoretically for as long as the area remains protected (Courrau 1999). The Australian Government National M&E Framework reports on resource condition trends and associated measures at least every five years (Natural Resource Management Ministerial Council 2003).

Spatial resolution

The geographic scale for an assessment depends on the size of the activity and can range from local (patch) scale to the continental scale. For example, WWF uses the WCPA Evaluation Framework to conduct assessments of large protected area systems (i.e. WWF Rapid Assessment and WWF Brazil) for land prioritization decisions and advocacy. The Nature Conservancy (Measures of Success) and WWF-CATIE use evaluation methodologies at the scale of one or more protected areas (usually landscape scale) for adaptive management and accountability, while at the next scale down Fraser Island and Tasmanian Wilderness World Heritage areas (Australia) both have detailed site specific monitoring and evaluation programs primarily for adaptive management.

National donor-based conservation organisations can conduct a single assessment of their programs at national scale (e.g. WWF Brazil), or in terms of the cumulative total of its individual projects or sites (e.g. Earth Sanctuaries Ltd).

[3] Biological information here refers to information that quantifies a biological, biophysical or ecological parameter, such as species richness, vegetation cover, soil type, rate of carbon sequestration etc.

Evaluating Conservation Success

Evaluation is typically defined as the use of monitoring results to judge or calculate the effect of actions relative to a particular outcome or objective (e.g. Hockings et al. 2000; Australian Government 2006a). Success can be evaluated relative to baseline data or control sites. Baseline data is useful, because it provides a realistic measure allowing positive and/or negative change to be identified. In practice, control sites that possess the same characteristics as the project site, and for which a difference in the variable of interest (eg grass cover) can be attributed to intervention actions, are difficult to find.

Evaluation is closely linked with opportunity costs, which in this context is the difference between the success resulting from one or more actions and an alterative action. Practically, measuring opportunity costs is difficult as they are generally only speculative. The conservation benefits of buying one block of land versus spending the same amount of money on improving another is difficult to calculate, and uncertain at best. However, like outputs, evaluation relative to opportunity costs helps place success in context.

Standardisation of approach

A standardised approach allows comparison between different projects, and across organisations (eg different conservation agencies, government agencies, community groups). This has been recognised by the Australian Government (2006b) which states that measurement methods and techniques should be standardised to facilitate amalgamation and analysis at State/Territory and national levels. The Natural Heritage Trust (NHT) requires that monitoring and evaluation of individual projects within each investment stream level be conducted in a consistent manner to enable amalgamation of information at each stream level and at the overall NHT level.

Practically, the use of a single, global approach is unlikely to be suitable for everyone, and transferring methods between organisations not appropriate. However, adoption of a common framework or approach can be more readily transferred between organisations, even those with differing aims and accounting standards.

Reporting and Evaluation Frameworks

Many conservancy organisations have designed or implemented approaches to evaluate their biodiversity outcomes performance. A selection of these approaches were analysed with respect to the issues discussed in the previous section and the full analysis is tabulated in Appendix 2. Some common strengths of the approaches include:

- Standardisation
    - in this case the term refers to comparability between reports from organisations using the framework. Standardisation is an advantage because it allows evaluation not only between sites but between organisations using the framework.
- Simple self-assessment system

  - is an advantage due to the reduced resources needed to carry out monitoring and evaluation, including reduced time, knowledge/expertise, and funding. Furthermore, it does not require external personnel.
- Allow comparison over time
  - the approach allows the same measurements to be made over time, thus allowing results to be comparable.
- Enables reporting at different levels (e.g. site, sub-catchment, catchment/regional, national, global)
  - scale is an important issue to consider when evaluating biodiversity conservation success, for adaptive management and when considering the information needs of the different stakeholder groups.

The most common disadvantages and/or limitations of the approaches were:

- Indicators are a) poorly defined, and b) inappropriate (do not relate to or reflect outcomes/impacts)
  - the lack of specific definition for indicators used for monitoring and evaluation systems results in multiple interpretations of each indicator; which impacts on interpretation of outcome measurement and in turn the objectives. Indicators chosen from a generic list or which have been misinterpreted due to poor definition result in measurements that do not accurately reflect conservation success and are not as useful as they could be for feeding information back into the project management cycle.
- Subjective assessments are not necessarily a weakness per se, however by definition they are influenced by user bias and are consequently less comparable.
  - This can be minimised to some extent by the provision of detailed guidance and criteria for assessments. For example, The Nature Conservancy Parks in Peril site consolidation scorecards are for the most part subjective assessments. But, they do provide guidance regarding each part of the assessment in an attempt to minimise the associated bias.
- Lack of linkage between actions and impacts
  - Management actions need to be explicitly linked to predicted and actual outcomes, however this correlation is often missing in reporting approaches. There may be a simple lack of documentation and explanation of the theoretical and conceptual models that underpin the management plan, or it may be that this issue has not been thought through at all, and hence exposes a major weakness in the approach.
- Loss of information on composite/averaged scores
  - Composite and averaged scores, such as are used in the World Bank/WWF scorecard for assessing management effectiveness of protected areas and The Nature Conservancy scorecards, may lose information relating to individual components of the composite score. However, they are useful for providing an overall ranking of a site or project, and for easy comparisons between sites and projects. Given the loss of information associated with this method, they should be used with care.

Of the selected approaches, the World Commission on Protected Areas (WCPA) Evaluation Framework for Assessing Management Effectiveness of Protected Areas rated most highly.

It is already in use by several international conservation organisations and is recommended as the most suitable framework for developing systems for biodiversity outcomes reporting.

The WCPA Evaluation Framework

The WCPA Evaluation Framework provides a generic overall approach within which specific evaluation methodologies can be designed and implemented to suit the particular organisation or program's needs. The framework provides a structure and process for designing management effectiveness evaluation systems, and identifies the components within the management process that should be evaluated. It also suggests indicators that may be appropriate for each of the components.

The WCPA framework is based on three principal management effectiveness issues:

- design (Level 1)
- appropriateness of management systems and processes (Level 2)
- delivery of protected area objectives (Level 3).

These are divided into six 'management elements' or components:

1. Context - establishing goals and objectives within the context of existing land status and pressures acting upon biodiversity
2. Planning – progress through a stage in which actions are planned
3. Inputs - progresses through a stage in which resources are allocated
4. Processes - followed by the implementation of actions
5. Outputs - as a result of the actions produces goods and services
6. Outcomes - which are then assessed relative to the goals and objectives[4].

The full WCPA Framework monitors and evaluates the effectiveness of management at every stage, or element, of the management cycle (Table 1).

Table 1, WCPA Framework for assessing management effectiveness of protected areas

Element of evaluation	Explanation	Assessed criteria	Focus of evaluation
1. Context: Where are we now?	Assessment of importance, threats, and policy environment	Significance, threats, vulnerability, national context	Status
2. Planning: Where do we want to be?	Assessment of protected area design and planning	Protected area legislation and policy, PA system design, reserve design, management planning	Appropriateness
3. Input: What do we need?	Assessment of resources needed to carry out management	Resourcing of agency, resourcing of site, partners	Resources
4. Process: How do we go about it?	Assessment of the way management is conducted	Suitability of management processes	Efficiency and appropriateness
5. Output: What were the results?	Assessment of the implementation of management programs and actions, delivery of products, and services	Results of management actions, services, and products	Effectiveness
6. Outcome: What did we achieve?	Assessment of the outcomes and the extent to which they achieved objectives	Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

[4] Full details of what is included within each of the WCPA Framework components can be found in Hockings et al. (2000).

Figure 2 shows the links between the three management effectiveness issues (Levels 1-3) and the management elements.

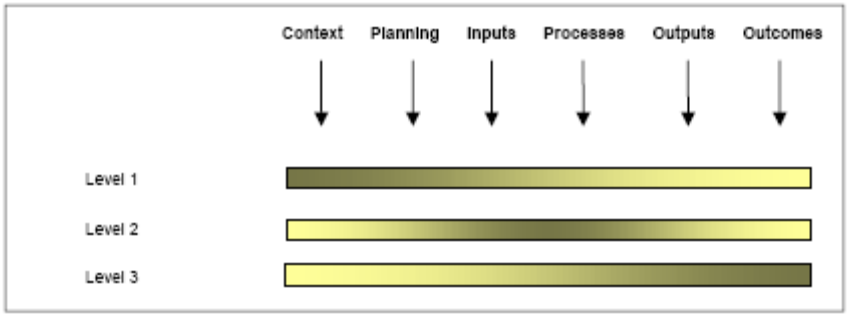


Figure 2, Levels of monitoring and evaluation in the WSPA Evaluation Framework (Hockings et al. 2002)

Level 1 focuses on design issues associated with the context, planning, input and process elements of management, and generally requires little or no additional data collection. It may also include a very basic level of output assessment.

Level 2 combines the approach of Level 1 with restricted additional monitoring of outputs and outcomes of management.

Level 3 emphasises monitoring the extent of achievement of management objectives by focusing on outputs and outcomes while retaining measures of management context, planning, inputs, and processes. Level 3 assessments are directed mainly at the site level.

While partial evaluations are possible within the framework, Level 3 (outcome evaluation) is argued by Hockings et al. (2002) to be the true test of management effectiveness. By focusing on the outcome element, the previous elements (context, planning, inputs, processes and outputs) can be circumvented to some extent. Only when the outcome is not being achieved need the earlier stages be examined to see where the problem lies.

The WCPA Evaluation Framework is increasingly being used in the conservation sector, both internationally and within Australia. It has provided the basis for detailed monitoring at the site level to rapid assessments of protected area systems. Users of the framework include WWF International Rapid Assessment and Prioritisation of Protected Areas Methodology (WWF 2001) and IUCN/WWF Forest Innovations Project (Stolton et al. 2001), and it is also currently being used by UNF/IUCN/UNESCO in a pilot project to develop a system of assessing the management effectiveness of World Heritage sites. The Fraser Island World Heritage Site Monitoring and Evaluation Program in Australia also used an early version of the WCPA Framework (Hockings and Hobson 2000).

Outcomes Reporting

Shifting from reporting on the first component to the last component (i.e. from context to outcomes) of the management system increases the time and cost involved. This relationship is shown in Figure 3.

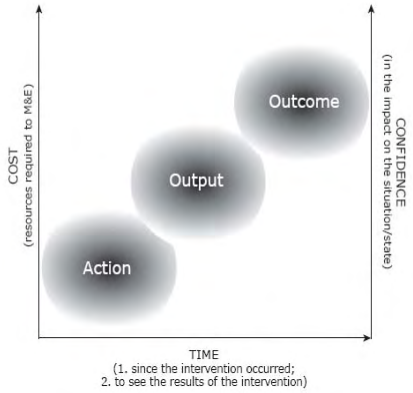


Figure 3, The relationship between time, cost, and confidence in reporting with respect to the components of the management process

The variable 'time' in this sense refers to (1) the time that has elapsed since the management intervention occurred and (2) the time required to observe and measure the results of the intervention. The resources required for monitoring, evaluation and reporting – referred to here as the 'cost' – also tend to increase as you shift from actions to outputs to outcomes. The third variable associated with reporting is the level of confidence that can be placed in the information being reported, with respect to impacts on the situation or state. The level of confidence increases with a shift from indirect measures such as actions and outputs, to a direct measure such as an outcome.

The positive time and cost relationship accounts to some extent for the traditional emphasis on reporting actions and outputs compared to outcome reporting. However, the positive relationship with confidence levels demonstrates the need for outcomes reporting if accountability is a prime goal.

Using Expert Knowledge

Expert knowledge is often excluded or used implicitly in conservation reporting on the grounds that it does not necessarily have the supporting evidence derived from systematic survey and quantitative analysis based on in situ data. However, in a practical sense it is a necessary source of information to inform the programme logic that underpins and connects the components of the management process. Frequently, the necessary scientific data are simply not available with which to guide decision makers through the six components of the management process (Figure 1). In their absence the expert knowledge of experienced land managers and scientists can be used to provide the logic that supports management decisions. Even in circumstances where location-specific, data-based scientific knowledge is available, expert knowledge is important to support and strengthen

the predictions and assumptions underlying and linking each component of the management process. Figure 4 is an example of how knowledge can be used to inform the programme logic, based on the management plans for a Bush Heritage property called Nardoo Hills Reserve in north-central Victoria.

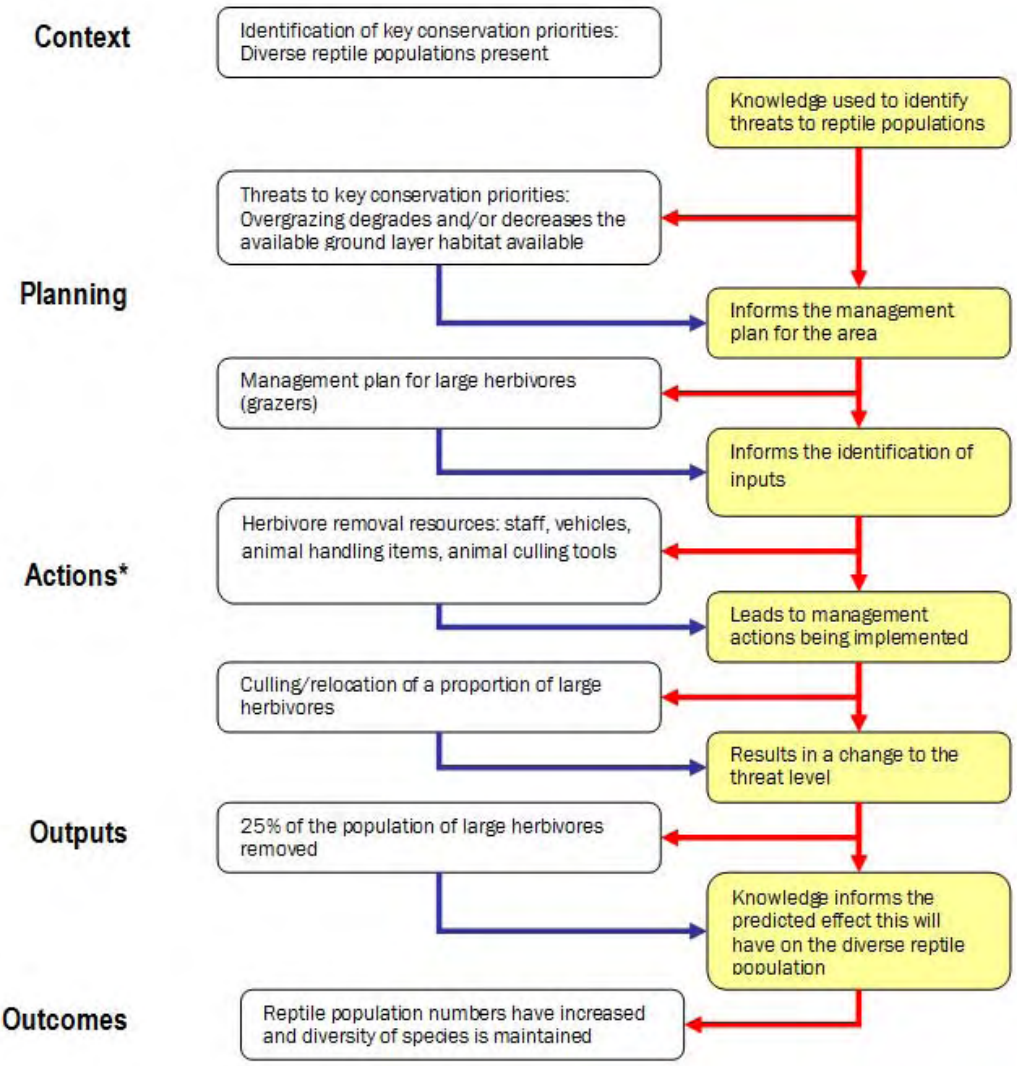
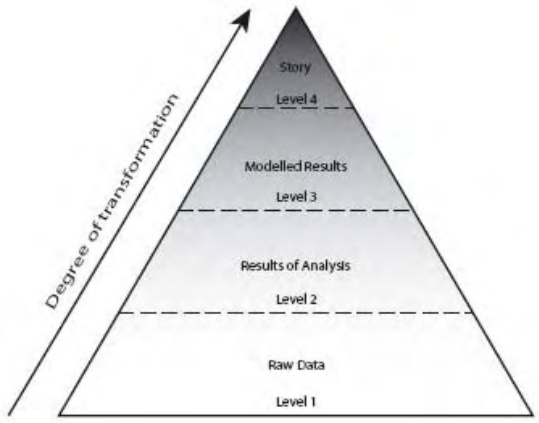


Figure 4, An example of using expert knowledge to inform the programme logic behind the management process – an example from a Bush Heritage property in north-central Victoria

Using an Information Hierarchy

In reporting on outcomes, it is important to consider the most appropriate 'level' of information as well as the type. In considering the different kinds of information that are collected, analysed and reported on in conservation programmes it is possible to identify four relatively discrete levels that represent significant transformations of data and information. We term this the 'Information Hierarchy'. At the base (Level I) of the hierarchy are the raw data collected from a monitoring and evaluation programme. Level 2 represents the results from the statistical analysis of the raw data. In Level 3 the results from the data analysis are further processed using a model that generates an index value that is more

directly related to the biodiversity target. Finally, the information in Level 4 represents a qualitative interpretation of the modelled index values using a story or narrative in plain English. The four levels in the Information Hierarchy are illustrated in Figure 5. We found this hierarchy very useful when eliciting stakeholder preferences.



Story (narrative): "Brown Treecreeper population is flourishing" etc.

Modelled result: Risk of Extinction using Population Viability Analysis (PVA)

Analysed information: Statistical modelling of population size

Primary data collection: Field observations of bird species presence and abundance

Figure 5, The four-level 'Information Hierarchy' representing increasing transformation of the data, showing its application to a hypothetical biodiversity conservation objective: Improving the population viability of the Brown Treecreeper

The outcomes information reported at a given level can be combined with data from indirect measures of conservation success. For example, financial investment data (an economic input) can be plotted against the modelled Level 3 information on the PVA risk of extinction risk (Figure 6). In this way, the financial information provides useful context for interpreting the ecological outcomes data. Relationships between investment and outcome can also be used to show investment options for the future, and the effect these options are likely to have on conservation outcomes for the treecreeper population. Indirect contextual information can also be used as an educational tool, where through combination with outcome data, the effect and importance of ongoing investment (or management actions) to achieving outcomes can be demonstrated.

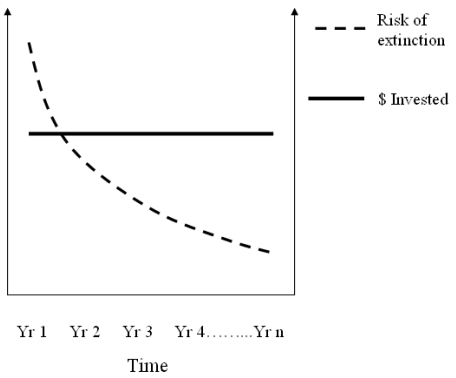


Figure 6, Example of Level 3 information hierarchy reporting - financial investment data

Key Findings

Evaluating Conservation Success

- Goals and objectives should be set at the program level and at the property level. The objectives should be SMART (Specific, Measurable, Achievable, Realistic, and Time-specific) and based on outcomes rather than actions.
- Targets should be utilised for each objective, as a means of quantifying success. These targets should be formulated on baseline data to ensure they are realistic and achievable.
- Goals, objectives, and targets should be made clear to all stakeholders to reduce confusion and misconceptions about the organisation's aims and expectations.
- The monitoring and evaluation system should use the Pressure-State-Response (PSR) conceptual model as the basis for strong program logic. This can then be further refined using the generic results chain with the addition of context as specified in the WCPA Framework (context-inputs-actions-outputs-outcomes), in which the causal links between components are made clear.
- The immediate evaluation focus should be on the outcome component in order to demonstrate the impacts of strategic management actions. As such, monitoring will involve the collection of biological data as the principal data type corresponding to outcome evaluation for biodiversity conservation.
- To demonstrate causality (of management actions on outcomes), all management actions should be documented and used as explanatory variables in the evaluation of outcomes. (Note that this does not involve the evaluation of actions/outputs, merely their quantification.)
- To obtain the full benefits of a monitoring and evaluation system, evaluations should include evaluation of indirect (output) measures of success in order to provide success contextualisation and to better inform adaptive management. This will necessitate the collection of social and economic data types in addition to biological data.
- Monitoring should begin before any management actions commence and continue after the actions have finished. In terms of land acquisition as a management action, monitoring may not be possible until the land has been purchased, in which case monitoring should begin as soon as possible after the land is bought. Monitoring should continue into the future so that lag-time responses are captured.
- The spatial extent of monitoring should include the full zone of impact of the management actions at the property level. In terms of organisational levels, the reporting system should allow the calculation and evaluation of overall program/organisational success relative to program level objectives, presumably as the cumulative total of the outcomes of each constituent property.
- Evaluation of success should be of outcomes relative to property and program objectives and targets.
- External audits are beneficial in increasing stakeholder trust and confidence in the results of evaluation, as well as providing useful information for adaptive management, and should be incorporated as a periodic element of the evaluation system. Due to funding restraints, external audits should be conducted approximately once every 5-10 years.

These recommendations are incorporated into the same format table used to report analysis of selected approaches to demonstrate the incremental nature of the framework monitoring and evaluation system implementation (Appendix 3).

Communicating Conservation Success

- The approaches used by donor-based conservation NGOs to communication of conservation success are relatively similar. There is limited communication of quantitative, outcome based information. Even where detailed outcome monitoring and evaluation systems are being conducted, the reporting style is kept simple and tends to be in the form of a narrative or series of short dot points. There is a need for an approach which promotes reporting on conservation outcomes in a more quantitative manner.
- The communication of conservation outcomes needs to be better tailored to the information requirements and preferences of stakeholders. This may involve reporting different aspects or levels of detail to different stakeholder 'groups'. The information communicated should reflect the strategic assessment behind the results. Such 'communication tailoring' will usually require a stakeholder consultation to ascertain requirements of individuals or groups.

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Appendix 2 Results of Analysis of Selected Frameworks and Approaches

This appendix reproduces Table 3 from Mackey et al (2007), the analysis of approaches and frameworks used in the conservation sector for reporting on conservation success.

Acronyms used: 'SA' Status Assessment; 'EA' Effectiveness Assessment; 'AA' Accountability Assessment; 'R' Research; 'RA' Rapid Assessment technique; 'AM' Adaptive Management; 'NS' not specified. Explanations of categories are Scope (PSR): 'P' Pressure; 'S' State; 'R' Response. Data Type (BSP): 'B' Biological; 'S' Social; 'P' Process. 'Measures effects' refers to approaches that measure the impacts (outcomes) of actions (outputs). 'Measures effectiveness' refers to approaches that evaluate the impacts (outcomes) of actions (outputs) against objectives. Brackets around evaluation elements indicates that the particular element was worked through as part of the management process, however it was not **evaluated** as part of the assessment process.

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
WCPA Framework for Assessing Management Effectiveness of Protected Areas	EA	An evaluation framework to provide a consistent overall approach (structure and process) to assessing management effectiveness	Multiple: site, network, landscape level	Multiple	Yes	Yes	PSR	Context Planning Inputs Process Outputs Outcomes	BSP	NS	(Hockings et al. 2000) (Hockings et al. 2002) (Hockings 2003)
WWF Rapid Assessment and Prioritization of Protected Area Management (RAPPAM)	SA (RAT)	Based on WCPA framework, designed for broad level comparisons among many (publicly owned) protected areas.	National	Ongoing OR one-off	No	No	PSR	(Context) (Planning) Inputs Processes Outcomes	BSP	I	(WWF 2006) (Ervin 2003)
IUCN/WWF Forest Innovations Project – Dja Reserve Cameroon	EA (RAT)	Assesses management effectiveness. Based on WCPA, uses a Participatory Rapid Appraisal approach. Results summarised using a SWOT analysis and a modified WCPA scorecard. Does not appear to assess outputs or outcomes i.e. assesses only issues associated with management.	Site: Landscape	One-off	No	No	PSR	Context Planning Inputs Process	BSP	E	(Hakizumwami 2000) (Hockings et al. 2002)

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
WWF/ assessment systems	EA	WWF – Central American Office, and CATIE – Agricultural Center of Tropical Investigation and Teaching. Based on De Faria method of evaluating management effectiveness in wilderness areas. Hierarchy of indicators are scored, and results presented as a % of the maximum obtainable score.	Multiple: site, network, program	Ongoing	No	No	PR	Context Inputs Processes Outputs (Outcomes)	BSP	I+E	(Cifuentes et al. 2000)
TNC PROARCA/CAPAS Monitoring Strategy	EA	Uses scorecard to monitor protected area management in Central America. Similar to CATIE/WWF and Site Consolidation Scorecard, but less complex and comprehensive. 43 indicators within 5 fields: social, administrative, natural & cultural resources, political-legal, and economic-financial. Results expressed as a % of the maximum obtainable score.	Site	Ongoing (6-12 monthly)	No	No	PR	Inputs	BSP	NS	(Courrau 1999)
TNC's Rapid Ecological Assessment (REA)	SA (RAT)	Grossmen et al 92 and SBSTAA. Technique to identify/predict where high levels of biodiversity exist. Uses a series of increasingly refined analyses, from GIS to field inventory. Not rapid (can take up to 6 months). Data intense. High skill level required. Only measures state.	Multiple: starts at regional scale and is refined to local scale	One-off	No	No	S	Context	B	I	(Sayre et al. 2000) (Grossman et al. 1992)

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
TNC 5-S Framework for Site Conservation: Measures of Success	SA	Process for designing conservation strategies and measuring success of these strategies. Focussed on conservation impact over time. Based on removing threat sources and reducing persistent stresses. Ranks/scores 'biodiversity health' (outcomes), and 'threat status and abatement' (context). 'Conservation capacity' measures are short-term indicators (input and process) which complement previous. Based on quantitative detailed info, reported on a 4 point scale. Have been adapted for use in the UNF/IUCN/UNESCO World Heritage status assessments. Fits WCPA.	Site: Local-landscape	Ongoing (threat status is assessed every 2-3 years, and biodiversity health every 3-5 years, conservation capacity every 1-2 years)	Yes	No	PSR	Outcomes (Context) (Input) (Process)	B(SP)	I	(TNC 2000)
TNC Enhanced 5-S Project Management Process	EA	Modified version of the original 5-S Framework. Changes are principally related to an incorporation of adaptive management project cycle characteristics into assessment. Greater focus on social and process data within response fields, and a clear understanding of how results can be used for learning. Only monitor and evaluate outcomes, but clear program logic allows evaluation of previous steps.	Site: Local to regional	Ongoing	Yes	Yes	PSR	Outcomes (Context) (Process)	B (SP)	I	(TNC's Developing Strategies Group et al. 2003)
CI Rapid Assessment Program (RAP)	SA (RAT)	Technique for rapidly assessing the conservation value of land in terms of biological and social data.	Regional	One-off	No	No	S	Context	BS	I	(Wright et al. 2006) (CABS 2006)

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
Canadian Government Results-based Management and Accountability Framework (RMAF)	1. AA 2. EA	Framework to support managers in measuring and reporting on outcomes throughout duration of project or policy (e.g. CIDA RBM approach)	Project/ policy based	Ongoing (project duration)	Yes	Yes	SR	(Inputs) (Process) (Outputs) Outcomes (Impacts)	Variable	I (E support)	(Treasury Board Secretariat 2001) (Rudd 2004)
AusAid Guideline: The Logical Framework Approach	EA	An analytical, presentational and management tool for planners and managers, which involves problem analysis, stakeholder analysis, developing objectives and selecting an implementation strategy. Logframe matrix summarises this info.	Project based	Ongoing	Yes	Yes	PSR	(Inputs) Process Outputs Outcomes	Variable	I	(AusAID 2005) (Tucker 2005)
DEH State of Environment Reports	SA	A strategic tool for monitoring the state of the environment and environmental performance, and for guiding environmental management.	State and country (regional to national)	Ongoing	No	No	SR	Context (state and threats)	BS	I (E advisors)	(DEHAA 1999) (CES 2006)
TNC Site Consolidation Scorecard	SA	Tool for assessing a site's progress towards achieving goal (functionality/consolidation). Subjective assessments of the implementation and quality of actions and site management (process) over life of project. Measured against baseline assessment	Property and network	One-off and ongoing	No	No	R	Planning Inputs Process	SP	I	(TNC 1999)
State of the Parks (DEC NSW)	1. SA 2. EA	Subjective assessments of the condition and management of NSW Parks using a maximum of 16 indicators relating to heritage, community, threats, and capacity. Limited biological information collected (e.g. on biodiversity status).	Property and state	Ongoing	No	No	SR	Output Outcome	SP	I	(NSW NPWS 2001) (DEC NSW 2004)

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
Impact Assessments: Environmental Impact Assessment (EIA)	EA	Assesses the environmental impacts of proposed development changes. Tend to be site focussed, don't give full consideration to cumulative impacts, subject to political will, advocates mitigation of negative impacts rather than advocating proactive alternatives.	Multiple: local to catchment	One-off	Yes	No	PS	Context (state and threats)	BS	I/E	(Bisset 1996)
Impact Assessments: Strategic Environmental Assessment (SEA)		Similar concept to EIAs: however SEAs tend to operate at a higher level (ie. at a policy/planning level as compared to the ___ level of an EIA)	Multiple: local to catchment	One-off	Yes	No	PS	Context (state)	BS	I/E	(Dalal-Clayton and Sadler 2005)
Impact Assessments: Biodiversity Impact Assessment (BIA)		Similar concept to EIAs, BIA's are a new tool that incorporates biodiversity and sustainability concerns	Multiple: local to catchment	One-off	Yes	No	PS	Context (state and threats)	BS	I/E	(Bagri and Vorhie 1997)
Impact Assessments: Social Impact Assessment (SIA)		Similar concept to EIA's: assesses the social impacts associated with proposed development changes	Multiple: local to catchment	One-off	Yes	No	PS	Context (state and threats)	S	I/E	(Burdge 2004)
Biodiversity Benefits Framework	EA	A methodological framework for assessing the biodiversity benefits of vegetation enhancement activities. Uses four principal steps, which involve identifying threats, predicting expected response(s), choosing monitoring method, and assessing monitoring results. 'Benefits' evaluated as actual changes compared to predicted changes. Limited guidance to reporting given.	Multiple: local to catchment	One-off	Yes	No	PSR	(Context - threats) (Outputs) Outcomes	B	I	(Freudenberger and Harvey 2003) (Freudenberger et al. 2004) (Freudenberger and Harvey 2003)

Approach Type	Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/ No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)	References
			Geographic (organisational)	Temporal							
CI's Outcome Monitoring protocols	EA	Divides outcomes into three categories: extinctions avoided, key biodiversity areas protected, and corridors created. Each outcome has two core indicators (state) plus 4-5 supplementary indicators (response). Simplistic, quantitative, measurements may be difficult.	Site/project	Ongoing (bi-annual assessment)	Yes	Yes	S(R)	Outcomes (Inputs) (Process) (Outputs)	BS	I	(GCF 2003)

Appendix 3 Recommended Increment Evaluation Framework

Approach Type		Purpose	Overview	Scale		Measures Effects Yes/No	Measures Effectiveness Yes/No	Scope (PSR)	Element Evaluated	Data Type (BSP)	Internal (I)/ External (E)
				Spatial (organisational)	Temporal						
Recommended Bush Heritage Increment Framework	Immediate	AA	Aims to provide greater accountability to supporters by reporting information on conservation outcomes from management actions.	Site	Ongoing	Yes	Yes	SR	Outcomes	B	I
	Future	EA		Site and property	Ongoing	Yes	Yes	PSR	Context Planning Inputs Process Outputs	BSP	I & E
Bush Heritage Current Outcomes Monitoring Program		AA	Aims to provide sensible indicators as surrogates for key outcomes.	Site	Ongoing	Yes	?	S	Outcomes (Outputs?)	B	I
WCPA Framework for Assessing Management Effectiveness of Protected Areas		EA	An evaluation framework to provide a consistent overall approach (structure and process) to assessing management effectiveness	Multiple: site, network, landscape level	Multiple	Yes	Yes	PSR	Context Planning Inputs Process Outputs Outcomes	BSP	NS

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LAND AND WATER AUSTRALIA

Program Logic Visual Display Tool – Functional specification

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List of Definitions

Term	Explanation

Table of Contents

1 Introduction

1.1 Background

The Australian Government has invested in building capacity of NRM bodies to develop frameworks for Monitoring, Evaluation, Reporting and Improvement (MERI). MERI frameworks are based on a program logic and may be developed for assets, themes, programs,projects or organsiations. To date program logics have made assumptions explicit but not the evidence that supports these assumptions. In order to provide greater confidence in the program logics, they should ideally be evidence based and hence there is a need to link evidence to particular parts of the logic. A well evidenced program logic will enable regional NRM bodies to:

- Develop more robust and defendable logics at the core of MERI frameworks
- Greater investor confidence in contribution of investment to desired outcomes
- Improved robustness of investment decisions
- Improved capacity to measure return on investment
- More meaningful monitoring
- More focused evaluation of investment impact on resource condition outcomes
- More meaningful reporting

Clear Horizon Pty Ltd has been instrumental in the innovation and development of the new national MERI approach and in training regional NRM bodies in the development of MERI frameworks. They have approached Land & Water Australia (to investigate the option of adding functionality to the NRM Toolbar to support implementation of an evidence based approach to supporting visual program logics within the MERI frameworks.

The NRM Toolbar is a knowledge system for NRM professionals and is supported by an internet based toolbar. The system facilitates the sharing of knowledge between regional NRM bodies and provides mechanisms for two-way flow of knowledge between regions and information providers.

The NRM Toolbar was first released in October 2007. In Feb 2008 a new component will be released called the Evidence Base application. The Evidence Base application allows NRM groups to develop a searchable online database of evidence relevant to their decision-making and business needs. It is linked to the NRM Search Engine to support automated transfer of bibliographic metadata.

This project represents the opportunity to integrate two areas of key NRM innovation in Australia enabling us to take a place at the international table of evidence based

practice.

1.2 Purpose of document

The purpose of this document is to describe the functional requirements and use cases for the Program Logic Visual Display Tool.

1.3 Assumptions & Dependencies

- It is assumed that the user has already set up an evidence base and has created the diagram required to create the Program Logic/Conceptual Model page. Appropriate links will need to be added once the Lists of Evidence have been created;
- If a user can run a diagram and it's associated files on their local pc (from a zip file), then the diagram and the files (contained in a zip file) will be supported by the Visual Display Tool;
- The zip file uploaded to the Program Logic/Conceptual Diagram will need to contain the original file used to create the diagram so that it can be downloaded by Administrators/Moderators of the Evidence Base;
- Some deviation to the specifics mentioned in this document may occur due to a desire to keep to the core Drupal code (as close as possible to the upgrade path).

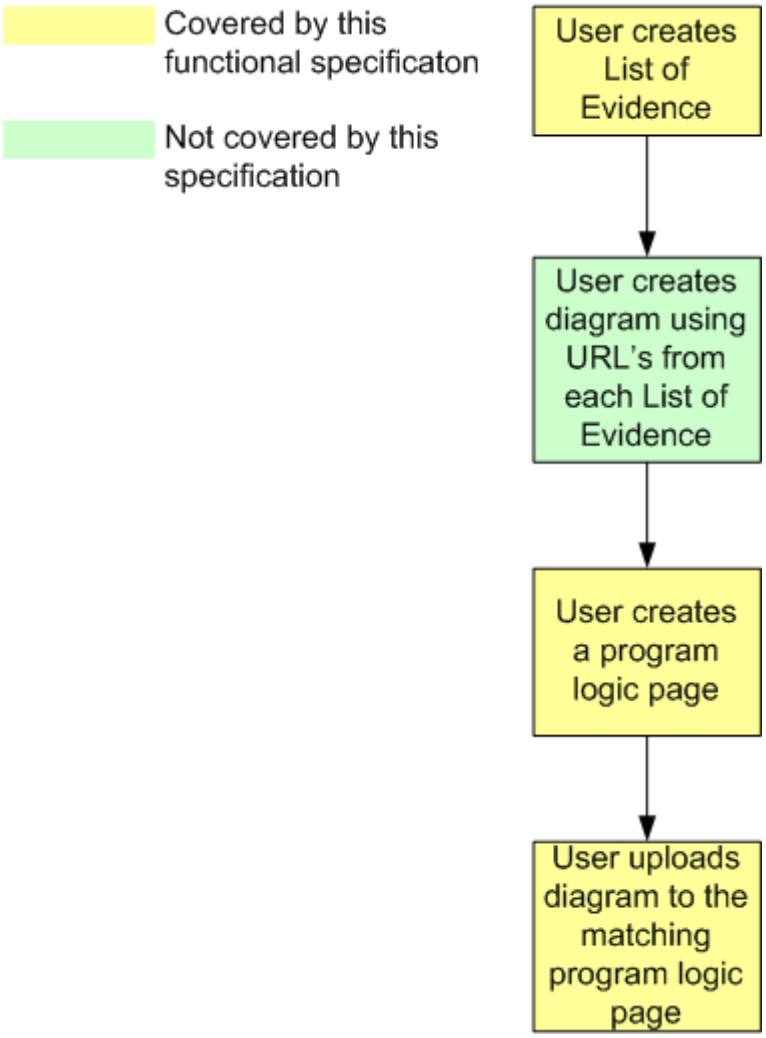
1.4 Scope

This specification covers the following functionality:

- The uploading of conceptual diagrams such as program logics to the NRM Toolbar Evidence Base application;
- The association of individual pieces of evidence (metadata records for items) with 'lists of evidence';
- Not covered is the creation or editing of the program logic diagram.

2 Business Process Diagram

Below is a high level summary of the functionality for the user in regards to the Program Logic Visual Tool.



3 Use Cases

3.1 Use Case Overview

Actor	Description
 Evidence Base Administrator	The Administrator has permission to: • Create/Edit Lists of Evidence • Create/Edit Program Logic and Conceptual Diagram pages
 Evidence Base Moderator	The Evidence Base Moderator has permission to: • Create/Edit Lists of Evidence • Create/Edit Program Logic and Conceptual Diagram pages
 Evidence Base Member	The Evidence Base Member has permission to: • View Lists of Evidence • View Program Logic and Conceptual Diagram pages

3.2 UC-1 – Create a List of Evidence

Name	Create a List of Evidence
Description	This use case describes the process for creating a new List of Evidence
Features	Create new list of evidence
Actors	EB Administrator, EB Moderator
Pre-Conditions	That the Evidence Base is already set up and the evidence records already exist for the Evidence Base. The actor is already logged into the Evidence Base.
Basic Flow	The basic flow describes the steps for creating a new list of evidence within an Evidence Base.
1	The actor selects a particular Evidence Base that they are a member of
2	The system displays the Evidence Base home page, SD-5
3	The actor chooses to create a new List of Evidence (LOE) from the right hand navigation
4	The system displays the List of Evidence page, SD-1, displaying only fields for entry
5	The actor enters a value in for all of the mandatory fields and clicks to submit the LOE
6	The system creates the LOE and returns to the EB home page, SD-5
7	The actor elects to search the EB for relevant records to add to the LOE
8	The system displays a list of search results, SD-4
9	The actor selects the appropriate record from the drop down box next to the required search result. The actor elects to add this record to the selected LOE
10	The system displays the “Add evidence to LOE” page, SD-2
11	The actor enters a value in for all of the mandatory fields and clicks to submit to the LOE
12	The system displays the LOE with the new record listed SD-1
13	The actor wishes to fill in the summary and authors fields so selects to edit the LOE
14	The system displays page SD-1, in edit form
15	The actor fills in/edits the “Summary of the evidence” and the “Authors of the summary” field and elects to submit the changes
16	The system places a timestamp on the “Summary of the evidence” field. The system displays the completed LOE in view format, SD-1

Alternate Flow 1	**The actor wishes to add further evidence to a completed (time stamped) LOE**
16a	The actor elects to search the EB for relevant records to add to the LOE
16b	The system displays a list of search results, SD-4
16c	The actor selects the appropriate LOE from the drop down box next to the required search result. The actor elects to add this record to the selected LOE
16d	The system displays the "Add evidence to LOE" page, SD-2
16e	The actor enters a value in for all of the mandatory fields and clicks to submit to the LOE
16f	The system displays the LOE with the new record listed at the bottom of the LOE, under a section called "Evidence submitted for evaluation". The record is marked as unapproved for the LOE until approved. The system sends a notification to Administrators and Moderators of this EB that there is a record awaiting approval for this LOE.
16g	The actor (or other actor) navigates to the workflow page and selects the LOE requiring approval
16h	The system displays the LOE in the view page so that the actor can review the record/s that have been added recently and are awaiting approval for the LOE
16i	The actor approves and/or rejects the "Evidence submitted for evaluation"
16j	The system displays the view form of the LOE, SD-1. The approved evidence are now displayed under the "Approved evidence" section and the rejected records are displayed under the "Evidence considered and rejected" section
	End
Alternate Flow 2	**The actor wishes to add more evidence to the LOE before completing the summary**
12a	The actor conducts another search on the evidence base **Return to Basic Flow Step 8**
Alternate Flow 3	**The actor wishes to update the summary of the LOE**
16a	The actor navigates to the LOE page from the tab of the EB home page, SD-5
16b	The system displays a page containing a list of LOE's available for that EB, SD-3
16c	The actor selects the required LOE
16d	The system displays the LOE in view format, SD-2

16e	The actor selects to edit the LOE
16f	The system displays the LOE in edit format, SD-2
16g	The actor edits the summary and any other field required and elects to save the changes
16h	The system saves the changes and updates the summary timestamp to reflect the current date. The system displays the view format of the LOE, SD-2
	End
Alternate Flow 4	**Actor elects to cancel**
1	The actor elects to exit from the Create a List of Evidence function on any page. **Return to Basic Flow Step 2**
Alternate Flow 5	**Actor elect to remove an evidence record from a List of Evidence**
16a	The actor selects to edit the LOE
16b	The system displays the LOE in edit format, SD-1
16c	The actor elects to remove the required evidence/s from the LOE
16d	The system displays the LOE in view format with the selected evidence/s removed from the list of "Approved evidence"
	End
Post Conditions	Basic Flow: Create a List of Evidence Alternate flow 1: More evidence is added to an LOE and the LOE is re time stamped Alternate flow 2: More evidence is added to an LOE Alternate flow 3: The summary and the timestamp of the LOE is updated Alternate flow 4: No List of Evidence is created Alternate flow 5: An evidence record is removed from the LOE
Extension Points	
1	None
Notes	
1	
2	
Business Rules	
	BR-001, BR-002, BR-003, BR-004,
Validation	

Screen references	
SD-1	List of Evidence page
SD-2	Add Evidence to LOE page
SD-3	LOE page
SD-4	Evidence base search results
SD-5	Evidence base home page

3.3 UC-2 – Create a program logic

Name	Create a program logic
Description	This use case describes the process for creating a new program logic
Features	New program logic created
Actors	Evidence Base Administrators, Evidence Base Moderator
Pre-Conditions	The relevant Lists of Evidence have been created and the url's have been entered into the program logic diagram. The actor is already logged into the Evidence Base.
Basic Flow	The basic flow describes the steps for the actor to create a new program logic using the existing program logic diagram
1	The actor selects a particular Evidence Base that they are a member of
2	The system displays the Evidence Base home page, SD-5
3	The actor selects the "Create Program Logic" link in the right hand navigation
4	The system displays the program logic page, SD-6, displaying only fields for entry
5	The actor fills in the mandatory fields and clicks to upload the diagram
6	The system displays a file upload box, ready for the user to browse and select the appropriate zip file
7	The actor selects the required zip file and elects to upload the file
8	The system checks the file for valid code and displays the uploaded file on the page
9	The actor selects the related LOE's for this program logic from a list and elects to submit the form
10	The system displays the newly created program logic in view mode

Alternate Flow 1	**The user wishes to edit the program logic**
10a	The actor selects the edit mode of the program logic
10b	The system displays the program logic in edit mode
10c	The actor edits the appropriate fields, including uploading a new zip file which will replace the existing zip file. The actor elects to submit the changes.
10d	The system displays the program logic in view mode with the changes made.
	End
Alternate Flow 2	**Actor elects to cancel**
1	The actor elects to exit from the Create a Create a Program Logic function on any page. **Return to Basic Flow Step 2**
Post Conditions	Basic Flow: A new program logic is created Alternative Flow 1: A new program logic is created and edited Alternative Flow 2: No program logic is created
Extension Points	
1	None
Notes	
1	
Business Rules	
Validation	
	VR-001, VR-002
Screen references	
SD-006	Program Logic page
SD-005	Evidence Page Home page

3.4 UC-3 Create a Conceptual Model

Name	Create a conceptual model

Description	This use case describes the process for creating a new conceptual model
Features	New conceptual model created
Actors	Evidence Base Administrators, Evidence Base Moderator
Pre-Conditions	The relevant Lists of Evidence have been created and the url's have been entered into the Evidence Diagram. The actor is already logged into the Evidence Base.
Basic Flow	The basic flow describes the steps for the actor to create a new program logic using the existing evidence diagram
1	The actor selects a particular Evidence Base that they are a member of
2	The system displays the Evidence Base home page, SD-5
3	The actor selects the "Create Conceptual Model" link in the right hand navigation
4	The system displays the conceptual model page, SD-7, displaying only fields for entry
5	The actor fills in the mandatory fields and clicks to upload the diagram
6	The system displays a file upload box, ready for the user to browse and select the appropriate zip file
7	The actor selects the required zip file and elects to upload the file
8	The system checks the file for valid code and displays the uploaded file on the page
9	The actor selects the related LOE's for this conceptual model from a list and elects to submit the form
10	The system displays the newly created conceptual model in view mode
Alternate Flow 1	**The user wishes to edit the conceptual model**
10a	The actor selects the edit mode of the conceptual model
10b	The system displays the conceptual model in edit mode
10c	The actor edits the appropriate fields, including uploading a new zip file which will replace the existing zip file. The actor elects to submit the changes.
10d	The system displays the conceptual model in view mode with the changes made.
	End
Alternate Flow 2	**Actor elects to cancel**

1	The actor elects to exit from the Create a Conceptual Model function on any page. **Return to Basic Flow Step 2**
Post Conditions	Basic Flow: A new conceptual model is created Alternative Flow 1: A new conceptual model is created and edited Alternative Flow 2: No conceptual model is created
Extension Points	
1	None
Notes	
1	
Business Rules	
Validation	
	VR-001, VR-002
Screen references	
SD-007	Conceptual Model page
SD-005	Evidence Base Home page

3.5Business Rules

BR-001	When the review period for an LOE has been reached, the system will notify all Administrators and Moderators that the LOE needs to be reviewed. The user can then review the LOE and reset the review period to “none”.
BR-002	The summary timestamp of the LOE is only updated if the summary field is changed.
BR-003	Once the Level of Evidence field has been filled in once, it will auto-populate when the same item is added to a different LOE, within that Evidence Base
BR-004	Editing the Level of Evidence field for an item in any one LOE will change it for all occurrences of that item in all LOE’s, within that Evidence Base.
BR-005	
BR-006	
BR-007	

BR-009	
BR-010	
BR-011	
BR-012	
BR-013	

3.6 Validation rules

The following validation rules are in addition to the current validation and error handling for the site and existing functionality:

VR-001	When the files are uploaded for the Program Logic and Conceptual Model, the system will check whether there are any PHP tags within the file. If so, the system will not allow the file to be uploaded.
VR-002	The file uploaded for the Program Logic and Conceptual Models should be of type zip
VR-003	

4 User Interface Requirements

The following requirements are related to the look and feel of the tool:

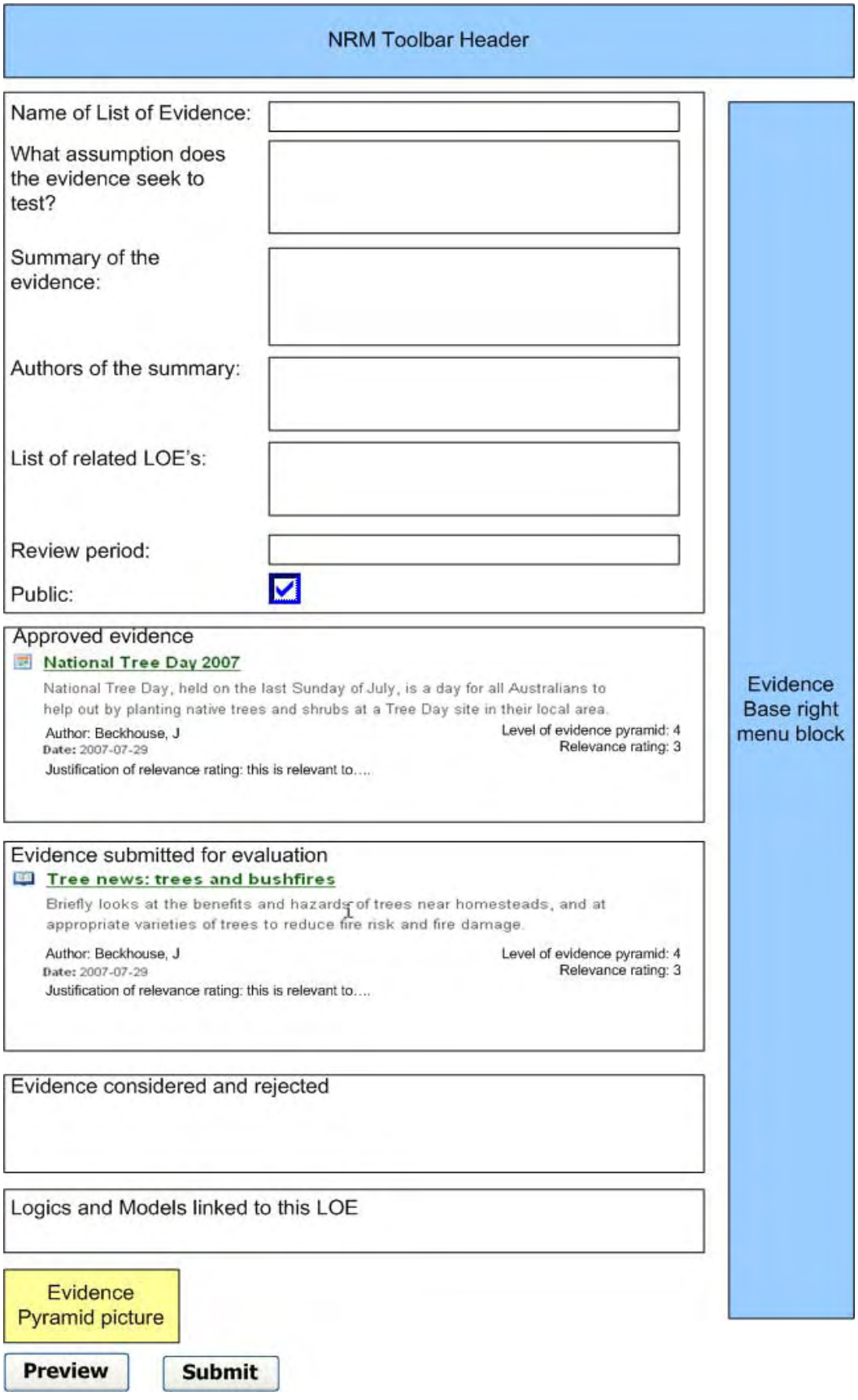
4.1 Screen designs

The first page of the add on needs to have some basic introductory material on:

1. why this add on is important,
2. what is evidence in NRM and how is it used,
3. some definitions of key terms,
4. how to use the add on,
5. a few nice images on this page would be good also

4.1.1 List of Evidence Page

SD-1


NRM Toolbar Header
Name of List of Evidence:
What assumption does the evidence seek to test?
Summary of the evidence:
Authors of the summary:
List of related LOE's:
Review period:
Public:
Approved evidence
National Tree Day 2007
National Tree Day, held on the last Sunday of July, is a day for all Australians to help out by planting native trees and shrubs at a Tree Day site in their local area.
Author: Beckhouse, J
Date: 2007-07-29
Level of evidence pyramid: 4
Relevance rating: 3
Justification of relevance rating: this is relevant to....
Evidence submitted for evaluation
Tree news: trees and bushfires
Briefly looks at the benefits and hazards of trees near homesteads, and at appropriate varieties of trees to reduce fire risk and fire damage.
Author: Beckhouse, J
Date: 2007-07-29
Level of evidence pyramid: 4
Relevance rating: 3
Justification of relevance rating: this is relevant to....
Evidence considered and rejected
Logics and Models linked to this LOE
Evidence Pyramid picture
Preview
Submit
Evidence Base right menu block

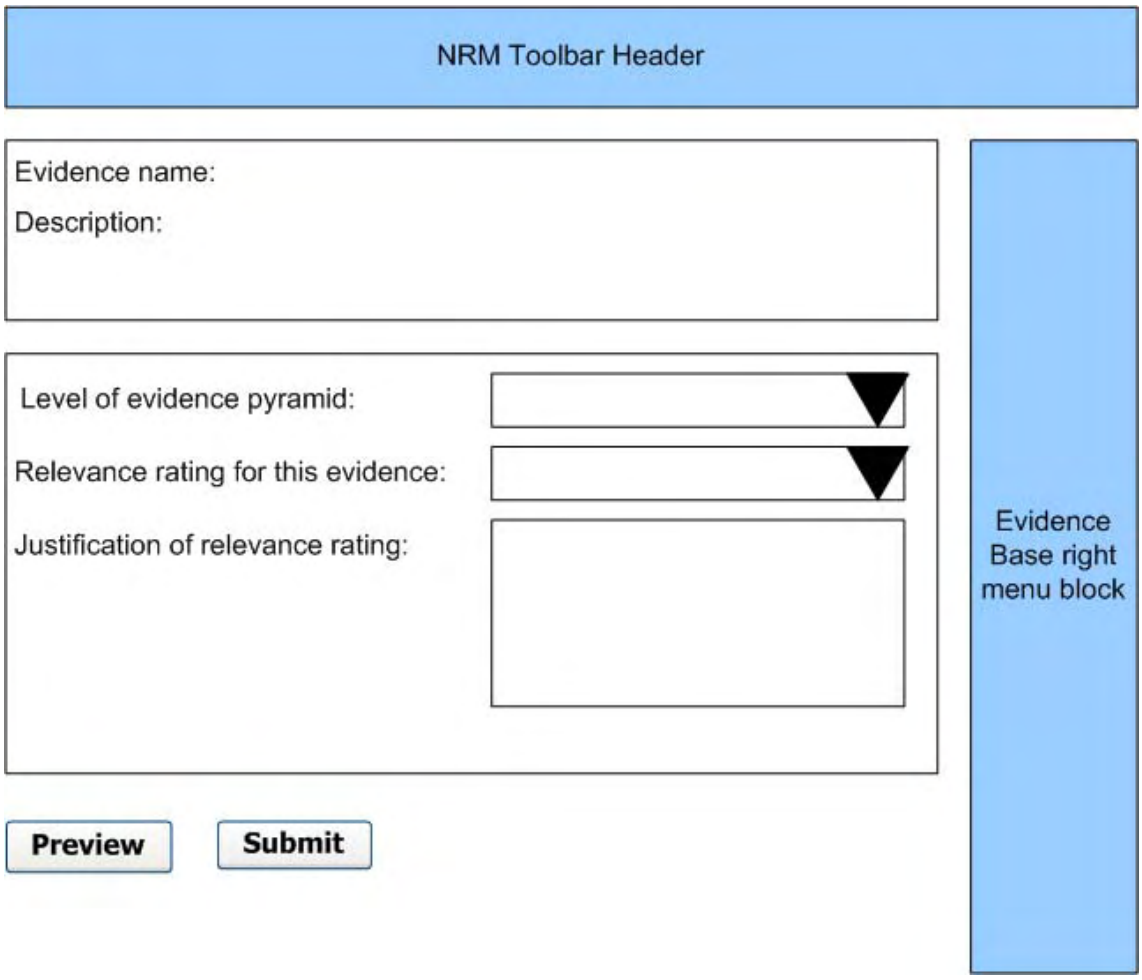
Field Name	Type	Comments	Entry Help text
Name of List of Evidence	Text entry - Free text (max 200 characters) Mandatory		This is the short name of the LOE
What assumption does the evidence seek to test?	Text entry - Free text (max 500 characters) Mandatory		Describe the assumption that is being tested by the evidence listed below
Summary of the evidence:	Text entry - Free text (max 1000 characters) Mandatory	Requires text formatting tools	This is where a summary of the evidence listed can be added
Authors of summary:	Text entry - Free text (max 500 characters) Mandatory	These will be separated in the same format as the evidence base records	Please note the authors of this version of the summary
List of related LOE's:	Text entry - selection of all LOE's for this EB	Should display Name of LOE and will be hyperlinked to the LOE page	Select the required LOE
Review period:	Text entry - Drop down selection of days: • None(default) • 30 • 90 • 120	The review period will consider the last date of modification of the LOE. This can be edited at any stage by the user.	Please select the appropriate review period for this LOE. All administrators and moderators will be notified when a review is required.
Public	Checkbox (default is checked)	This checkbox will behave in the same way as making an evidence record public/private.	
Approved evidence	Display evidence: • Name • Description	List of each evidence that is associated with the LOE.	Not required

	• Date • Author • Weight of evidence from the evidence pyramid • Relevance rating • Credibility rating • Justification for relevance and credibility rating	The name will be hyperlinked to the record in the same way as the search results.	
Evidence submitted for evaluation	Display evidence: • Name • Description • Date • Author • Weight of evidence from the evidence pyramid • Relevance rating • Justification for relevance and credibility rating	List of evidence that is awaiting approval to the LOE. The name will be hyperlinked to the record in the same way as the search results.	Not required
Evidence considered and rejected	Display evidence: • Name • Description	List of evidence that has previously been submitted to the LOE and has been rejected. The name will be hyperlinked to the record in the same way as the search results	Not required
Logics and Models linked to this LOE	Display program logics and conceptual models: • Name (will be hyperlinked to the logic/model page	All Program Logics and Conceptual Models that this LOE is linked to will be listed and hyperlinked to	Not required

		the logic/model page. The link is already captured from when a Logic/Model is created	
Evidence Pyramid	Thumbnail image that is auto populated with an image stored in the system	The user can click on this thumbnail to view a larger version. See Appendix 1 for copy of the Evidence Pyramid	

4.1.2 Add Evidence to LOE

SD-2

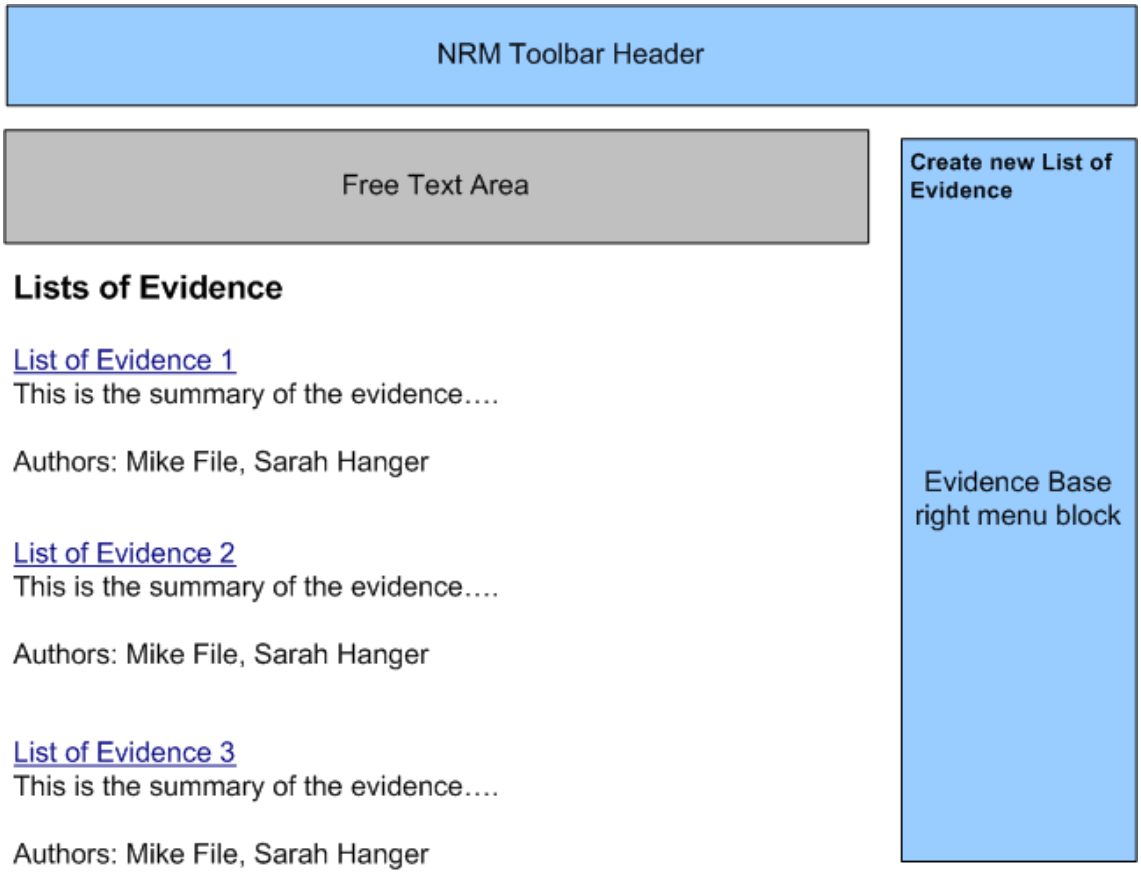


Field Name	Type	Comments	Entry Help text
Evidence name	Display evidence name Mandatory	Display name that is displayed in search results for that record	
Description	Display description for evidence Mandatory	Display description that is displayed in search results for that record	
Level of evidence pyramid	Text entry – drop down selection: need to specify values	This may be automatically populated if this piece of evidence	Select the appropriate level of the evidence pyramid that best

	Mandatory	has already been added to another LOE and thus a Level of evidence has been associated to the piece of evidence	describes this evidence
Relevance rating for this evidence	Text entry – drop down selection: need to specify values Mandatory		Select the level which best describes how relevant this evidence is to testing cause and effect
Justification of relevance rating	Text entry – free text (max 500 characters) Mandatory		Please add a summary of your reasons for selecting the relevance rating

4.1.3 LOE page

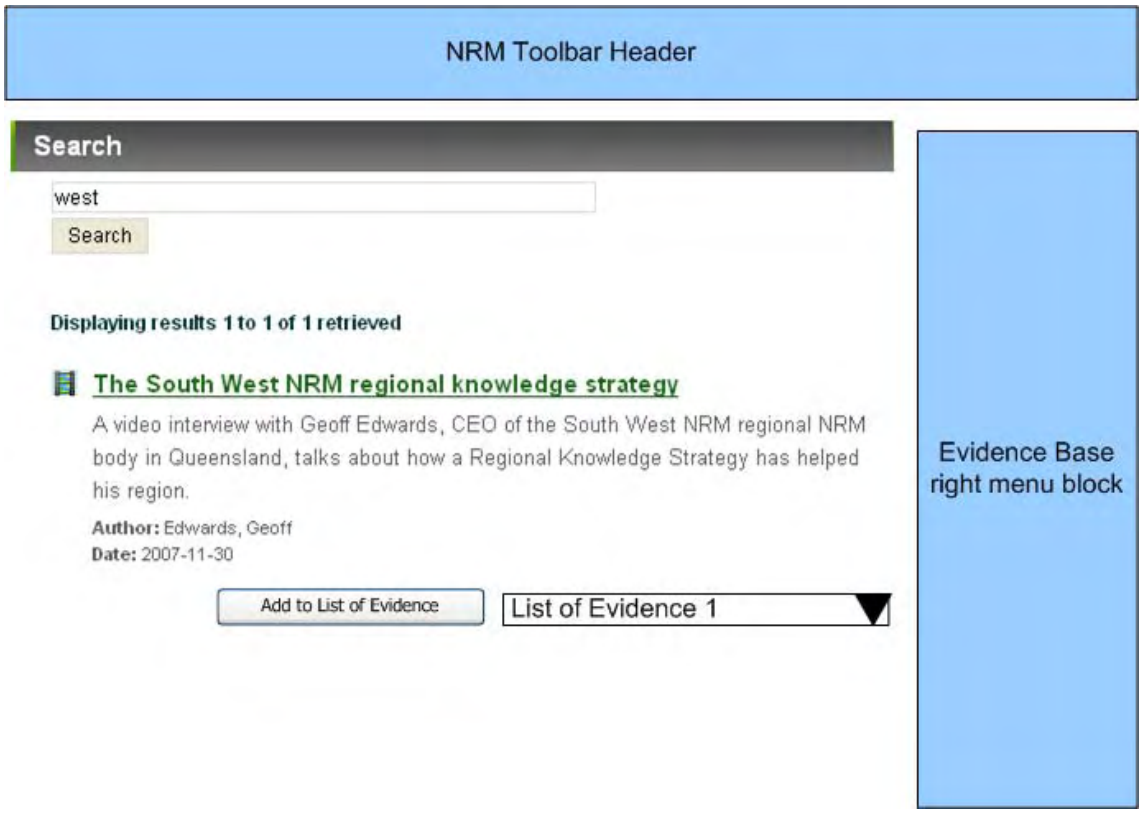
SD-3



Field Name	Type	Comments	Entry Help text
Free text area	Free text	Only editable by an Administrator	
Name	Auto populate with Name	Hyperlinked to LOE page. To be sorted alphabetically according to Name	
Summary	Auto populate with Summary of the evidence		
Author	Auto populate with Authors of the summary		

4.1.4 Evidence Base Search Results

SD-4



Field Name	Type	Comments	Entry Help text
Search box	Search only on current evidence base	This uses the existing evidence base search located on the evidence base home page. The only change is the addition of the drop down and button to the results	
Add to List of Evidence	Control button	When selected, it will use the List of Evidence that is selected in the List of Evidence drop down box and will display page SD-2. Only visible to EB members	
List of Evidence	Text Entry – Drop down box	Only visible to EB members	

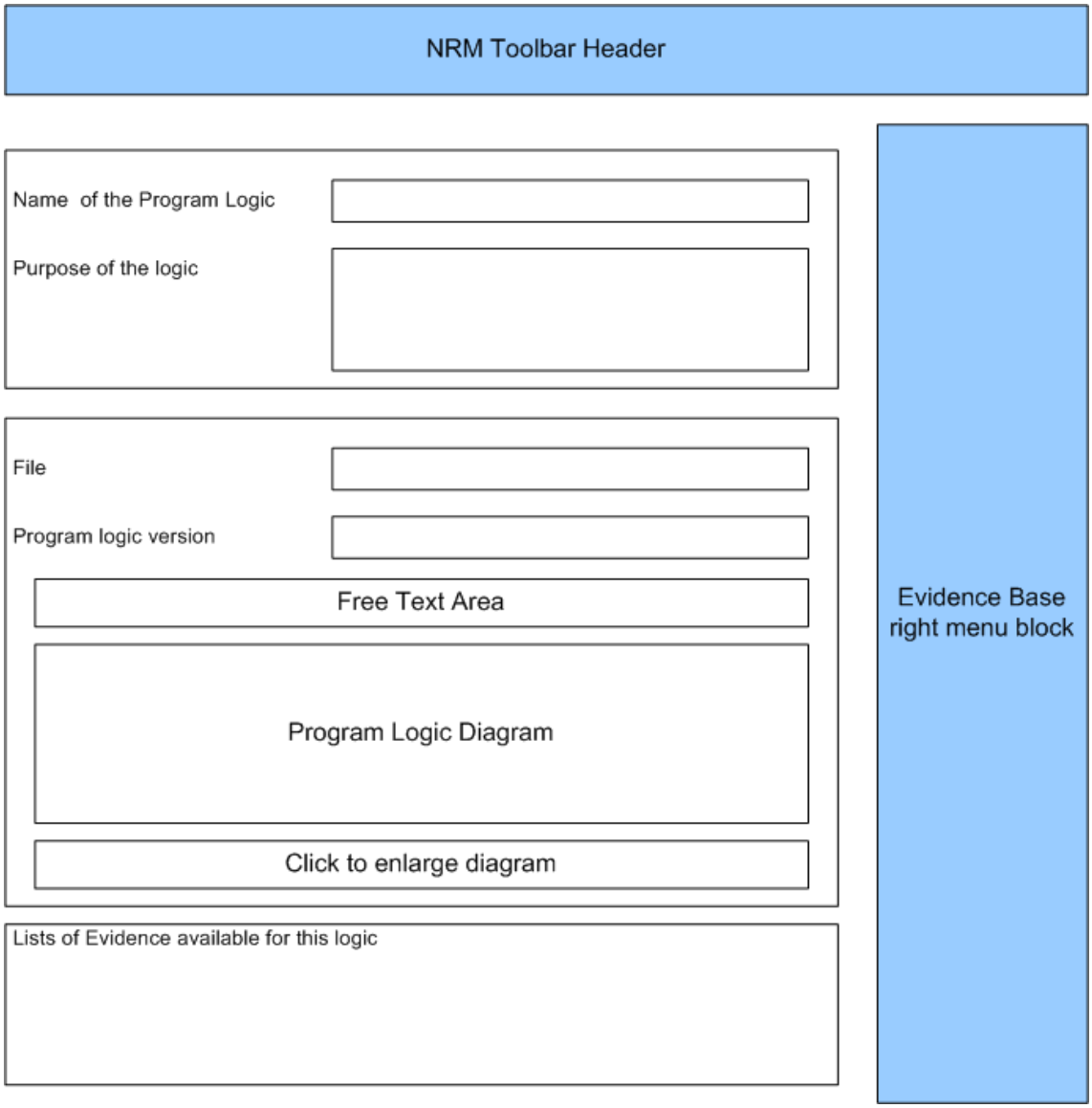
	containing all List of Evidence in the Evidence Base		

4.1.5 Evidence Base Home page

SD-5

4.1.6 Program Logic page

SD-6

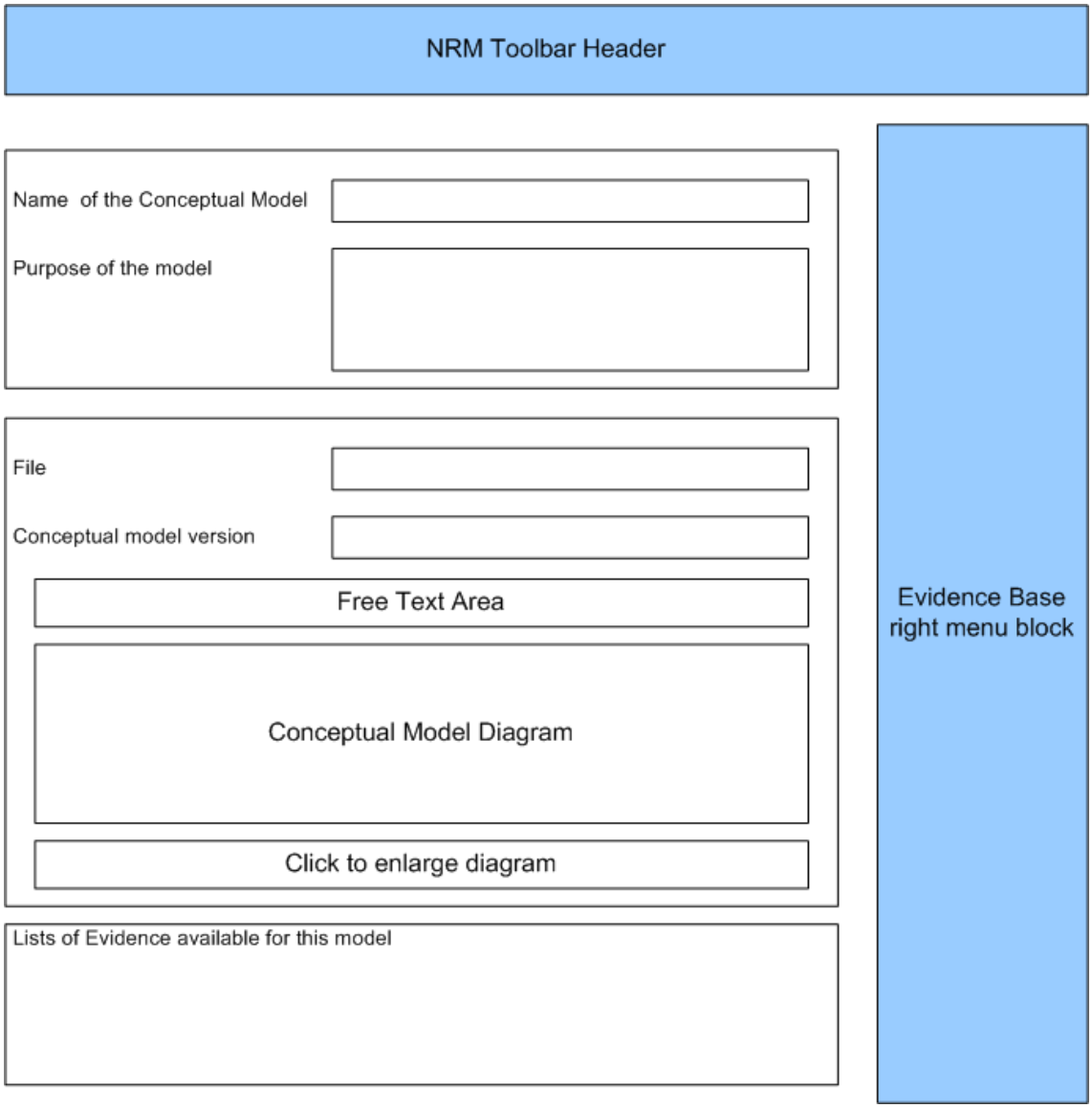


Field Name	Type	Comments	Entry Help text
Name of the Program Logic	Text entry - Free text (max 200 characters) Mandatory		This is the name of the Program Logic
Purpose of the logic	Text entry - Free text (max 500 characters) Mandatory		What is the purpose of the Program Logic
File	Browse selection for zip file to upload. Mandatory	When the zip file is uploaded, display as a downloadable file	Select browse to find and upload a copy of the Program Logic contained in a zip

			file
Program logic version	Text entry - Free text (max 50 characters) Mandatory	Next to this field, display date when file was last uploaded	
Free text area	Free text	Only editable by an Administrator	
Program Logic Diagram	Graphic	Display program logic diagram from file uploaded. The graphic should display in HTML format so that the hotspots on the diagram are still active.	
Click to enlarge diagram	Link to popup of a larger version of the diagram	The popup should open in a browser window so that the links are still active	
List of Evidence available for this logic	Selectable list of all LOE's Mandatory	Display selected LOE's with name hyperlinked to the LOE page	

4.1.7 Conceptual Model page

SD-7



Field Name	Type	Comments	Entry Help text
Name of the Conceptual Model	Text entry - Free text (max 200 characters) Mandatory		This is the name of the Conceptual Model
Purpose of the model	Text entry - Free text (max 500 characters) Mandatory		What is the purpose of the Conceptual Model
File	Browse selection for file upload. Mandatory	When the file is uploaded, display as a downloadable	Select browse to find and upload a copy of the

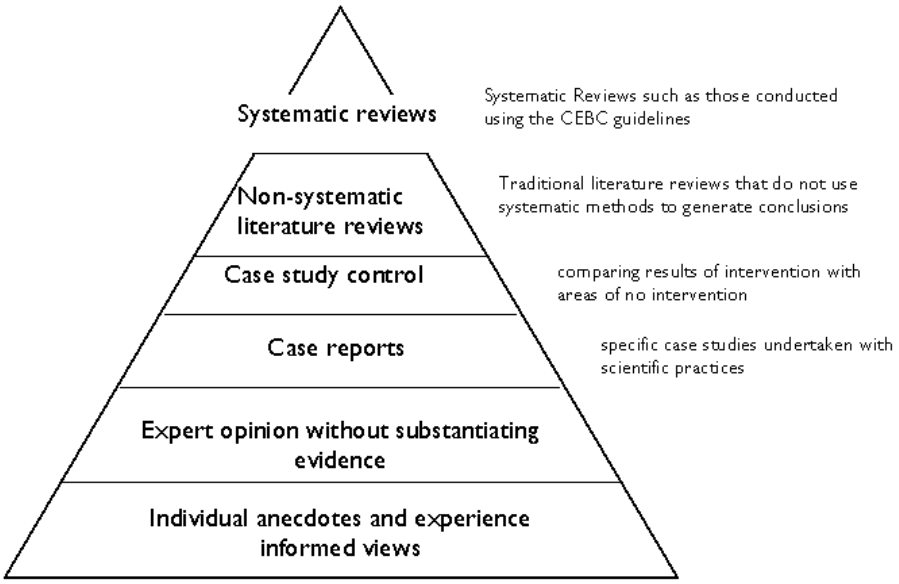
		file	Conceptual Model
Conceptual model version	Text entry - Free text (max 50 characters) Mandatory	Next to this field, display date when file was last uploaded	
Free text area	Free text	Only editable by an Administrator	
Conceptual Model Diagram	Graphic	Display conceptual model diagram from file uploaded. The graphic should display in HTML format so that the hotspots on the diagram are still active.	
Click to enlarge diagram	Link to popup of a larger version of the diagram	The popup should open in a browser window so that the links are still active	
List of Evidence available for this logic	Selectable list of all LOE's Mandatory	Display selected LOE's with name hyperlinked to the LOE page	

5 Appendices

5.1 Appendix 1

NRM Evidence Pyramid

There needs to be links from each level of the logic to detailed description of each level.



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ADDING PROGRAM LOGIC VISUAL DISPLAY TO THE NRM TOOLBAR

Business Requirements Specification

Document Details

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	1	Pre-workshop draft of requirements
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Approvals

Name/Position/Organisation	Signature
Rob Richards Principal Consultant ***CLEAR HORIZON***	/ /
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Name Title ***COMPANY***	/ /
Name Title ***COMPANY***	/ /

List of Definitions

Term	Explanation
MERI	Monitoring Evaluation Reporting and Innovation
List of Evidence	A new content type in an Evidence Base that will list individual pieces of evidence (reports, data, anecdotes etc) that relate to a particular relationship within a Program Logic or Conceptual Model. Individual pieces of evidence are represented by metadata about them including title, item type (report, data etc) and a link to the evidence when available
Program Logic	A new content type in an Evidence Base that will allow the uploading of Program Logic diagrams to the Evidence Base and link to Lists of Evidence
Conceptual model	A new content type in an Evidence Base that will allow the uploading of Conceptual models and link to Lists of Evidence

Table of Contents

1 Introduction

This project will develop software that will support the presentation of evidence associated with individual parts of a program logic (the core of a MERI framework). This is so the assumptions of the logic are transparently supported with evidence.

1.1 Background

The Australian Government has invested in training regional NRM bodies to develop frameworks for Monitoring Evaluation Reporting and Innovation (MERI). These frameworks are based on a program logic that may be developed for assets, themes, programs or projects. Program logics should ideally be evidence based and hence there is a need to link individual pieces of evidence to particular parts of the logic. A well evidenced program logic will enable regional NRM bodies to:

- Develop more robust and defendable logics at the core of MERI frameworks
- Improved effectiveness of investment decisions
- Improved capacity to measure return on investment
- More meaningful monitoring
- More focused evaluation of investment impact on resource condition outcomes
- More meaningful reporting

Clear Horizon Pty Ltd has been instrumental in the development of the new national monitoring and evaluation approach and in training regional NRM bodies in the development of MERI frameworks. They have approached Land & Water Australia (to investigate the option of adding functionality to the NRM Toolbar to support implementation of an evidence based approach to supporting program logics within the MERI frameworks.

The NRM Toolbar is a knowledge system for NRM professionals and is supported by an internet based toolbar. The system facilitates the sharing of knowledge between regional NRM bodies and provides mechanisms for two-way flow of knowledge between regions and information providers.

The NRM Toolbar was first released in October 2007. In Feb 2008 a new component will be released called the Evidence Base application. The Evidence Base application allows NRM groups to develop a searchable online database of evidence relevant to their decision-making and business needs. It is linked to the NRM Search Engine to support automated transfer of bibliographic metadata.

1.2 Purpose of document

The purpose of this document is to describe the business requirements and scope the addition of functionality to the NRM Toolbar to facilitate the linking of evidence to parts of a Program Logic.

1.3 Assumptions & Dependencies

- The NRM Toolbar evidence base application will be used to store bibliographic metadata about individual pieces of evidence relating to program logics
- Users will need to have set-up an Evidence Base prior to using the MERI add-on

1.4 Scope

Business requirements relating to the addition of diagrams to an Evidence Base and linking individual pieces of evidence from the base to individual elements of a MERI framework diagram. The 3 high level pieces of functionality required for this are:

The creation of a diagram with its parts linking to lists of evidence	The uploading of diagrams to the NRM Toolbar Evidence Base application	The association of individual pieces of evidence (metadata records for items) with 'lists of evidence'

The functional requirements section breaks these requirements down further.

2 Requirements

2.1Functional

Req 1	Drawing a program logic or conceptual model diagram
Req1.1	The drawing and editing of diagrams will occur outside the NRM Toolbar environment, as will the addition of hyperlinks to those diagrams.
Req 2	**List of Evidence (LOE) Pages**
Req 2.1	The user will be able to generate a new type of content in an Evidence Base called a List of Evidence (LOE). See screen layout of LOE in appendices.
Req 2.2	Only an EB_administrator or EB_moderator will be able to create and edit a LOE
Req 2.3	This will list multiple items of evidence (eg reports, spatial data, anecdotal evidence, qualitative analysis) each listed with metadata.
Req 2.4	As soon as an individual item is added to a LOE, additional metadata fields are displayed with that item. These are: 1. **Level of evidence pyramid** (this stays the same and is independent of the LOE) 2. **Relevance rating for this evidence** (this is specific to the particular LOE the item is associated with – note this is important since the one item may be attached to more than one LOE) 3. **Justification for relevance rating –** free text field See Appendix for more detail on metadata including help text.
Req 2.5	Once the 'Validity of evidence' field has been filled in once, it will auto-populate when the same item is added to a different LOE.
Req 2.6	Editing the 'Validity of evidence' for an item in any one LOE will change it for all occurances of that item in all LOE's.
Req 2.7	The system will auto-generate a URL for the LOE. The URL will be persistent.
Req 2.8	The user will be able to add a URL alias for the LOE
Req 2.9	A single LOE may be used by multiple Program Logics or Conceptual models. A section of the LOE page will list all logics

	and models that link to the LOE.
Req 2.10	The List of Evidence page will also contain the following fields: ▪ The question this evidence relates to ▪ A field for a summary of the evidence in the list
Req 2.11	If a Program Logic or Conceptual Model is listed as 'private' then so are all the LOE's associated with it
Req 2.12	A LOE can be marked as 'public' or 'private' (private means only Evidence Base members can view)
Req 2.13	Evidence lists will be created prior to the program logic in Do View. This will enable the relevant links to be copied from the NRM website and pasted in Do View.
Req 2.14	Lists have an editable review period field. Once the review period is reached the administrator will be notified that the list needs to be reviewed and updated if appropriate
Req 2.15	Once a summary has been added to the page it will be time stamped/frozen to ensure that the records within the list are relevant to the summary
Req 2.16	Ability to update the summary and list with new records and new timestamp created
Req 2.17	New listings can be added to an existing summary but will be in another section of the page to differentiate it from the rest of the page ie 'Evidence submitted for evaluation'
Req 2.18	Records that are rejected from the summary are tagged for future reference and are accessible through a link to a page listing all these called 'Evidence considered and rejected for this list'
Req 2.19	Lists have an editable review period field. Once the review period is reached the administrator will be notified that the list needs to be reviewed and updated if appropriate.
Req 2.20	A page will be available from the EB home page (right menu) displaying all 'Lists of Evidence' available in the Evidence Base
Req 2.21	The LOE will indicate the date that the summary was authored
Req 2.22	The LOE will allow a user to list other relevant LOE's
Req 2.23	There will be a place for a small image of the Evidence Pyramid on the LOE page. This will be clicked on to open a larger version of the pyramid.
Req 3	**Searching for evidence to add to a List of Evidence**
Req 3.1	An item of evidence must be added to an Evidence Base before it can be added to a LOE
Req 3.2	When a search is conducted within an Evidence Base, the option

	to 'Add to the selected List of Evidence' will be given next to each search result (for Evidence Base members only). A dropdown will be next to the button listing all LOE's. This will add the item to the 'Evidence submitted for evaluation' section of an LOE page.
Req 3.3	A piece of evidence in the LOE section 'Items awaiting evaluation for this list' can only be approved by an EB_admin or EB_moderator which will then send it to the 'Approved evidence' section.
Req 3.4	A user will be able to select to search the evidence base from a keyword box and item type dropdown on the List of Evidence page (see screen layout in Appendix)
Req 4	**Creating a program logic page (see mock up in Appendices)**
Req 4.1	An EB_administrator or moderator will be able to create a web page to present the program logic diagram and the following information: ▪ The name of the program logic ▪ The purpose of the program logic ▪ A statement to the effect of 'Click on hyperlinks within the diagram to view a list of related evidence'.
Req 4.2	The user system will auto-generate a persistent URL for the page
Req 4.3	The user can create a URL alias for the page
Req 4.4	The user will be able to upload a HTML diagram to the page via a form. An investigation is required as to the technical options for uploading a group of DoView files to Drupal.
Req 4.5	A Program Logic needs to be in HTML view (including images and/or javascript) to be uploaded to the site
Req 4.6	The original Program logic file will be available for download by admin or moderators.
Req 5	**Creating a conceptual model page (same as Program logic but LWA will pay for any additional costs here)**
Req 5.1	An EB_administrator or moderator will be able to create a web page to present the Conceptual model diagram and the following information: ▪ The name of the model ▪ The purpose of the model ▪ A statement to the effect of 'Click on hyperlinks within the diagram to view a list of related evidence'. ▪ List of LOE's associated with this diagram (list with name of LOE which is the relationship)
Req 5.2	The user system will auto-generate a URL for the page

Req 5.3	The user can create a URL alias for the page
Req 5.4	The user will be able to upload a diagram to the page via a form
Req 5.5	A conceptual model needs to be in HTML view (including images and/or javascript) to be uploaded to the site (needs
Req 5.6	The original conceptual model image will be available for download by admin or moderators.
Req 6	**Navigation**
Req 6.1	The user will be able to 'Select to view' a specific program logic or conceptual model from a dropdown menu on the Evidence Base home page. The title of the individual logics and models will be listed. This will only appear on the EB home page once a logic or model is available.
Req 6.2	Once a diagram is uploaded, a user will be able to select to view a List of Evidence associated with individual elements of a program logic by clicking on a hyperlink within the program logic.
Req 6.3	Evidence Base Administrators and Moderators will be able to submit a new Program logic or Conceptual Model (suggest base members don't be given this right as the quality and preparation of the image is important.
Req 7	**User permissions**
Req 7.1	All current roles of the Evidence Base software will be maintained. These are: Evidence Base Administrator – can edit and add all content, controls list of moderators Evidence Base Moderators – can publish evidence submitted to the evidence base by non-moderators, can create/edit 'Lists of Evidence' and 'Diagram pages' Evidence Base Members – can view all content in the evidence base, public and private. Anonymous user – can view only public content in the evidence base, cannot view 'private' information.

2.2 Workflows of key functions

The following diagrams show a potential workflow for:

- How evidence associated with a program logic is viewed
- How a program logic is uploaded into an evidence base
- How evidence is added to a 'List of Evidence'

How evidence associated with a program logic is viewed

User goes to an Evidence Base (eg www.nrmtoolbar.net.au/wcma)

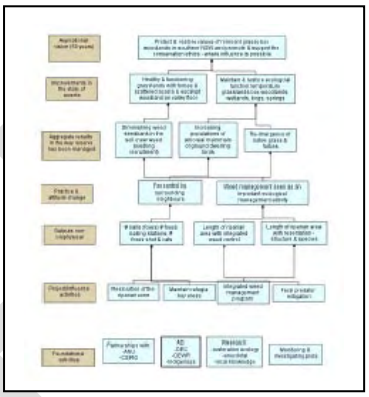
User selects to view a program logic from a list on the Evidence Base home page

A program logic page is presented (including a small version of the diagram)

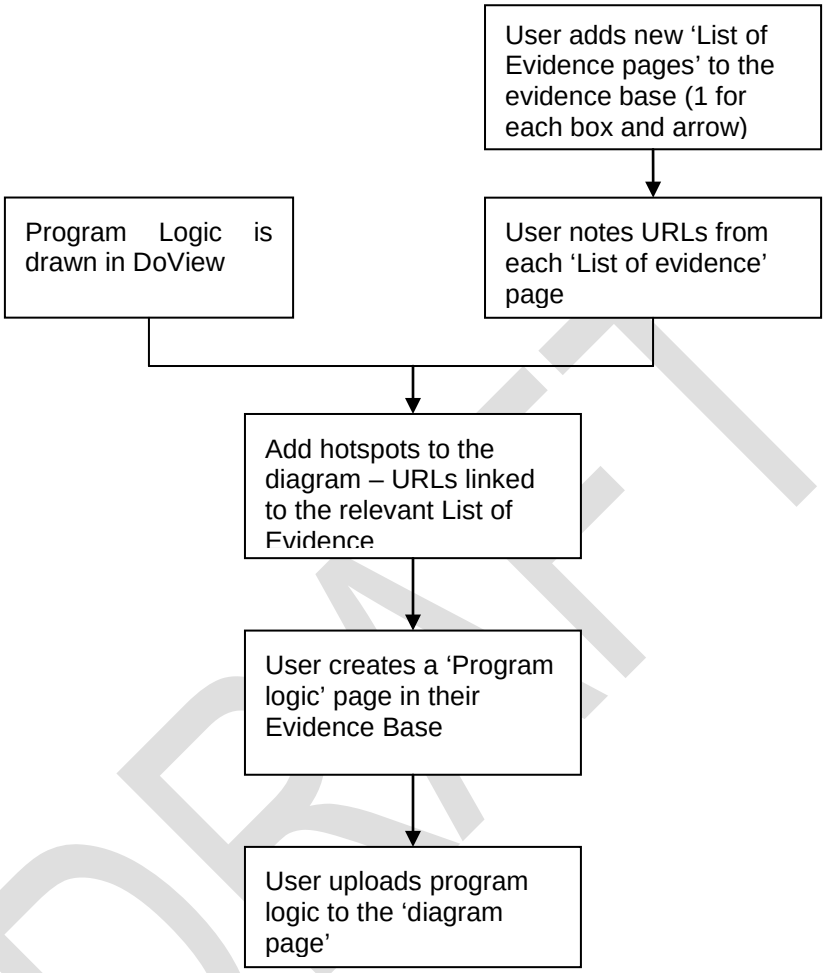
User selects an individual box or arrow

The List of Evidence associated with the selected box or arrow appears including a list of the individual items of evidence

See appendices for complete mock-ups of Program Logic and LOE page layouts



How a diagram is created and uploaded into the Evidence Base*



*note that conceptual models will be added to the Evidence Base in the same workflow just using other software such as Adobe Publisher

2.3 User

As for the existing NRM Toolbar

2.4Interface

See Appendix for some layouts of key screens

2.5System

Adding this functionality to the Evidence Base module of the NRM Toolbar may dramatically increase the number of Evidence Bases and the quantity of material being uploaded to them. Therefore server performance will need to be closely monitored.

2.6Supportability

To be included under the existing NRM Toolbar IT support arrangements with Education.au, any new code must be tested by them prior to addition to the production version of the system.

2.7Data

Diagrams that are uploaded to the Evidence Base may come in a variety of digital image formats. DoView will produce and HTML version of the program logic for the user to view in their browser and a copy of the DoView file which produced the HTML can be uploaded to the NRM Toolbar also. If the user has DoView on their machine then when they download the DoView file it will be recognised by the machine.

2.8Training

A section will be incorporated into the Evidence Base user guide that covers this new functionality. This will need to be incorporated into the online help system of the NRM Toolbar.

2.9 Legal

As with the existing Evidence Base module, organisations need to remain fully aware of copyright issues surrounding the copy and distribution of material. Copyright warning notices are built into the workflows of the NRM Toolbar.

3 Risk & Issue Summary

1. That the diagrams added to the Evidence Base are so large in file size that the software becomes unusable for dial-up users
2. The complexity of adding hot-spots to diagrams reduces take up and use of the software
3. The time to edit a diagram is such that it deters necessary updating by users
4. That viewing large model maps within the web browser environment may limit useability.
5. That Drupal may not be able to handle the multiple file folder structure that is delivered by DoView. Note there is a work around for this that individual files are uploaded but this will take a lot of time for the user.

4 Appendices

[Provide details of any documentation you wish to attach (eg. Reports, screen layouts, forms etc.)]

Screen layouts are required for:

- Program logic pages
- Conceptual model pages
- List of Evidence pages

Program Logic page layout (EB_administrator mode)

This is the page that a Program Logic diagram would be uploaded to.

NRM Toolbar header

Edit | Add a List of Evidence

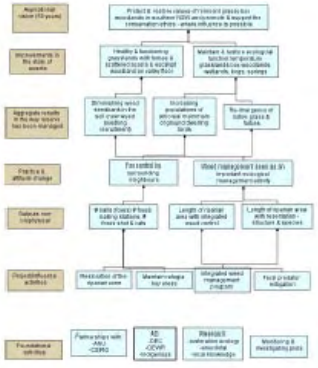
Name of the Program Logic

Purpose of the logic

Download file: [insert file name]

Program logic v# last updated [insert date]

Select a link in the diagram to view the List of Evidence



+ Click to enlarge [popup with only diagram]

View past versions of the logic

Lists of Evidence available for this logic:

- List of Evidence Name 1 (hyperlink to)
- Name 2

Evidence Base right menu block

Conceptual model page layout (EB_administrator view)

This is the page that a Conceptual model would be uploaded to.

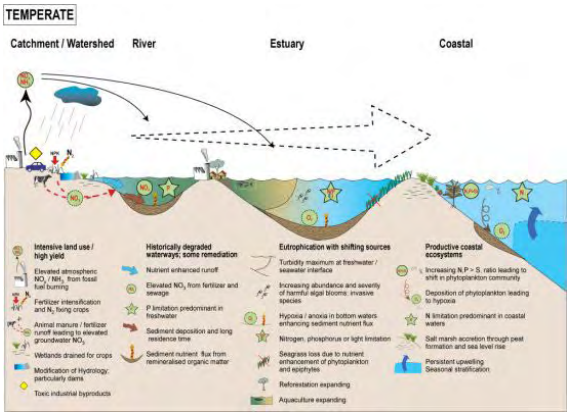
NRM Toolbar header

Edit | Add new List of Evidence

Name of the Conceptual model

Purpose of the model

Conceptual model



Click to enlarge (opens new window with only diagram in it)

Lists of Evidence available for this model:

- List of Evidence Name 1 (hyperlink to)
- Name 2
- Name 3

Evidence Base right menu block

List of Evidence page layout

NRM Toolbar header

Edit | Add new List of Evidence

List of Evidence: Short name of List

What assumption does the evidence seek to test?

Summary of Evidence listed below

Items of Evidence approved for this list

Note: for each item there will be additional metadata relating to how the item has been assessed for its evidence value for this particular question.

Items of evidence awaiting evaluation for addition to this list (as above)

Evidence Base right menu block

Search the base for items to list below as evidence

Search

Metadata summary for new content types (please check the requirements section above to ensure this is complete)

Drupal content type: Program Logic

Field name	Help text (description)	Comment
Name	This is the name of the Program logic	Free text
Purpose	What is the purpose of the Program Logic	Free text
Upload file	Select browse to find and upload a copy of the Program Logic	Attachment

Drupal content type: Conceptual Model

Field name	Help text (description)	Comment
Name	This is the name of the Conceptual model	Free text
Purpose	What is the purpose of the Conceptual model	Free text
Upload file	Select browse to find and upload a copy of the Conceptual model	Attachment

Drupal content type: List of Evidence (LOE)

Field name	Help text (description)	Comment
Name	This is the short name of the LOE	Free text
What assumption does the evidence seek to test?	Describe the assumption that is being tested by the evidence listed below.	Free text
Summary of Evidence	This is where a summary of the evidence listed can be added.	Free text – need lots of space plus formatting tools
Authors of summary	Please note the authors of this version of the summary.	Free text
List of related LOEs	Add the name and URL of any relevant LOEs	For each related LOE needs to be a place to add the name of the logic and the URL. One option is to have a dropdown of all

		current public LOEs and do this automatically.

Additional fields to be added to item (individual piece of evidence) on addition to a LOE

Field name	Help text (description)	Comment
Level of evidence pyramid	Select the appropriate level of the evidence pyramid that best describes this evidence	This will be a dropdown menu with the levels of the evidence pyramid to select
Relevance rating for this evidence	Select the level which best describes how relevant this evidence is to testing this assumption	A dropdown box with levels of relevance.
Justification of relevance rating	Please add a summary of your reasons for selecting the relevance rating	Free text field, formatting tools required

Text for Increment project page at www.bushheritage.org.au

Preferred URL www.bushheritage.org.au/increment (even if just an alias)

The Increment project

What is the project about?

'Increment' stands for **IN**vesment in **C**onservation and **RE**source manage**MENT** and is a research and development project aimed at improving mechanisms for conservation and natural resource management organisations to report their performance to investors. The premise behind this is that improved reporting will increase investor confidence and hence increase or maintain financial contributions to the conservation sector.

The need for the project

The conservation sector has long had criticism about its ability to show achievement of conservation outcomes. Like other non-profit sectors it is also under increasing pressure to be transparent about the use of donations and the efficiency of its operations.

While the commercial sector has relatively straight forward and standard measures of success based on financial indicators such as profit and share price, measuring performance in non-profit organisations is not as simple. Conservation organisations have additional challenges to content with such as long lag times between activities and end outcomes and proving contribution of actions to outcomes.

Bush Heritage Australia has invested in this project as it recognises the need to show transparency in performance to its valued donors. The improved indicators of performance will also allow the organisation to target operational areas and strategies requiring improvement.

The project methodology

The following is an overview of the project methodology.

Phase	Key tasks
Phase 1	• Identification of existing organisational processes that lead to sound outcome reporting • Design and conduct interviews to determine the outcome reporting preferences of investors
Phase 2	• Scope and conduct literature reviews to identify candidate tools and processes that deliver investor reporting preferences identified in Phase 1 • Select tools and processes • Combine selected processes and tools into a single approach
Phase 3	• Test the approach using operational testing and peer-review • Refine the approach • Develop and release adoption material

Publications from the project

1. Mackey B, Sobey E, Letcher RA and Cuddy SM 2007, *InCReMent Phase 1: Design & Feasibility*, Report to Australian Bush Heritage Fund, Fenner School for the Environment and Society, The Australian National University, Canberra.

2. Richards R, Kelly R, and Silver M 2009, A literature review to inform a framework for reporting to conservation investors. Bush Heritage Australia, Melbourne.

Who is supporting the project?

Increment has been financially supported by the Native Vegetation Program at Land & Water Australia and the Department of Water, Heritage and the Arts. BHA has provided in-kind support to the project.

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