# Using participatory action research to develop science communication material for a community group

**Charlotte Ellen-May Keller**
**U4001917**

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### *Declaration*

I declare that this sub-thesis is my own work and all sources have been acknowledged. I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma at any university, and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except when due reference is made in the text.

Charlotte Keller

**Charlotte Ellen-May Keller**

## Abstract

To develop science communication material for a community group can be a complex process, especially if there are a large number of people that need to be involved. This sub-thesis follows a participatory action research journey to develop a model to do this. Also provided is a revised model to assist other community groups to use participatory action research when developing their science communication material.

Participatory action research involves a number of iterative cycles between action, discussion and reflection and the model developed includes several reflection times, time for discussion with interested parties and individual research, and consultation with the interested parties so that the work is incorporated into other organizations. The resulting products have resulted in the "ownership" of the work by the community group. Not only will the resulting work showcase the community group, it should encourage communication between the interested parties, which results in the meshing of ideas and the development of new ideas.

The key findings of this sub-thesis are that:

- participatory action research can be time consuming
- there needs to be a clear procedure in all correspondence and meetings
- flexibility should be maintained for the duration of the research
- communication channels should be maintained
- expectations need to be managed
- reflection time is an important part of participatory action research
- participatory action research is a form of constructivist learning.

***Bendora arboretum contains many tree species from around the world***

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## Glossary

**Arboretum** (pl arboreta) a collection of living woody plants for the purposes of scientific research, conservation, display, education, recreation and enjoyment.

**FACTA** Friends of ACT Arboreta. A community group formed after the Canberra 2003 bushfires.

**Interpretation Strategy for Bendora Arboretum**

Communication/ Interpretation Strategy for Bendora Arboretum and Hut.

**Lowland** These arboreta are generally in the 'lower' areas of the ACT, i.e. urban Canberra. Some of these arboreta form part of Walter Burley Griffin's original plan for Canberra. The lowland arboreta include Westbourne Woods, Lindsay Pryor National Arboretum and the newly announced International Arboretum.

**Upland** This is a loose term used to describe the arboreta that were generally in the more rural areas of the ACT, mainly in the Brindabella vicinity. These upland arboreta were established primarily to identify potential forestry trees. The Forestry Bureau concentrated on planting the 'upland' areas of the ACT as it was felt that they would be the only areas available for forestry at the time. These arboreta include Bendora, Blundells, Blue Range, Reids Pinch and Snowgum.

## Overview of four arboreta in the ACT

Throughout this sub-thesis I have referred to four main ACT Arboreta, and for reference, a brief description is provided below (Table 1).

*Table 1: Overview of four arboreta in the ACT*

| | Description | Status |
|---|---|---|
| **Bendora Arboretum** | The majority of this arboretum was established between 1940 and 1951. It was the third highest in elevation of the ACT arboreta. There is an old hut close by. | This arboretum survived the 2003 bushfires, though it was singed at the edges. |
| | | |
| **Blundells Arboretum** | This was the oldest (established in 1929) and the biggest arboretum. There was also an interpretative walking track (easy) within this arboretum. It was also easily accessible from Canberra, with significant historical value also surrounding the arboretum. | This arboretum was burnt in the 2003 bushfires. It is currently being cleared and there are hoped to re-establish this arboretum. |
| | | |
| **Blue Range Arboretum** | This was established in 1941. Italian Prisoners were camped at this location, where they were working during WW2. The area had a high recreational value, generally for mountain biking. | This arboretum was burnt in the 2003 bushfires, however, the hut survived. It has been partially cleared. It is hoped that this arboretum also be re-established in some form. |
| | | |
| **International Arboretum** | Yet to be established. This will be very close to Canberra, and will be part of the 'lowland' arboreta. | Design competition open. |

**Bendora Arboretum**

Along the track to Bendora Arboretum the smell of eucalyptus is strong.

A lyrebird scuttles past, in a rush. It is oblivious to me. The surrounding bush still bears the burnt bark of the fires in 2003. A tin structure, Bendora Hut, emerges from the bush. It is a reminder of the old forestry days in the Brindabella's. The arboretum is nearby.

Fifty metres from the hut you are transported from Australia around the world. The pines from the USA beckon. Two gang-gangs fly past.

The sugar pine, which have their long cones covered in sap, give the appearance of being large sweets, covered in sugar.

A beautiful European larch, along with its Japanese cousin, are also present. They are whimsical and dance in the wind. Appropriate descriptive terms would be 'dainty' and 'beautiful'.

There are many different cypress species which come from different countries. I crush their leaves and smell the beautiful aroma – it is powerful and rich.

An avenue of trees from around the world commands my presence. Here I can sit and reflect on the many trees of similar age, all different heights and shapes. They all have different uses, some for timber, some were originally for ship masts in their country of origin, others were used for oil. Now which one was which?

As I wander through Bendora Arboretum, my foot hits something big in the grass, and I expect a rock. I see a huge pine cone with talons on it lying on the ground. It is a very large, spiky and heavy cone from the Coulter pine.

I find my favourite pine cone-the cone from the Himalayan pine. It is very attractive and its design was definitely one from nature's books.

There are many more trees in this small arboretum, and after many hours of watching and listening I meander back out and into the eucalypts once more. A kookaburra laughs at me for being so enthralled.

***The foliage of the pines provide a perfect picture opportunity***

# Chapter 1: Introduction

## *Overview*

Community groups are collections of people who have a common interest. Often this common interest has a range of stakeholders who need to be involved in the development of the community group's information.

This sub-thesis is a case study that explores my interaction with a community group to develop an interpretation plan for an arboretum. The community group, Friends of ACT Arboreta (FACTA), emerged from the ashes of a devastating bushfire that engulfed the Canberra region in January 2003. FACTA seeks to foster the management and appreciation of arboreta in the Canberra Region. Many members are, or have been, involved in forestry, botanic gardens, historical societies or similar professions. They are knowledgeable and dedicated people.

In early January 2003 there were 19 "upland" arboreta in the ACT. After January 20$^{th}$ 2003, there was only one upland arboretum left-Bendora Arboretum. Of the 18 burnt arboreta, two are currently being discussed for re-establishment / rejuvenation. The rest have been, or are about to be cleared.

With all other upland arboreta no longer able to be used, Bendora Arboretum has become, by default, the principal "upland" arboretum for teaching and recreation purposes. It also is of significant heritage value and was placed on the ACT Heritage Interim Register in September 2004.

A FACTA meeting on the 16 April 2003 identified a number of issues facing the ACT arboreta (Appendix 2). The status of Bendora Arboretum was one of neglect. Over 40 years of measurements had been taken from it, however these were officially finished in the 1970s. A result from the April 2003 trip was that FACTA wanted to ensure something would be done to enhance Bendora Arboretum for future use.

### *Background*

In 1930 a Bill was passed in parliament to establish a Forestry Bureau. One of the newly formed Forestry Bureau's main functions was to establish experimental stations for the study of silviculture, forest management and forest protection (Carron, 1985). In 1929, on the foot slopes of Mt Coree, the first upland arboretum was established- Blundells Arboretum. Over 30 more arboreta were established, as an attempt to find a species that could be used as an alternate timber source in Australia. Most of the species planted were conifers. For more than 30 years, these upland arboreta were measured and recorded. Data were held at CSIRO Forestry and Forest Products at Yarralumla (ACT). These arboreta became a 'series' for the comparison of different species (though not all the same species were planted at each of the arboreta) right across the Brindabella topography.

Arboreta are valuable because they provide scientific data on tree responses against various geographical factors. These factors include climatic variations, growth at different aspects, different elevations and a range of soils. They are a resource for tree identification as well as showing differences between tree sources and their response to competition from other trees. Arboreta can provide a source of plant material for ongoing research, such as cloning, through the propagation of the trees.

The potential to use arboreta as teaching resources is increasing. They provide a unique experience where students can identify and study many unusual trees. ACT Arboreta are particularly useful to the Australian National University Forestry course and the University of Canberra Landscape Architecture course, due to the region's arboreta being well established, their wide variety of trees and their location within the ACT. Many people also utilise arboreta for personal study, walking, birdwatching, fungi collecting or similar pursuits.

Figure 1 is a map of the 29 arboreta, both "lowland" and "upland", which existed as of 1984. Bendora arboretum is number 5.

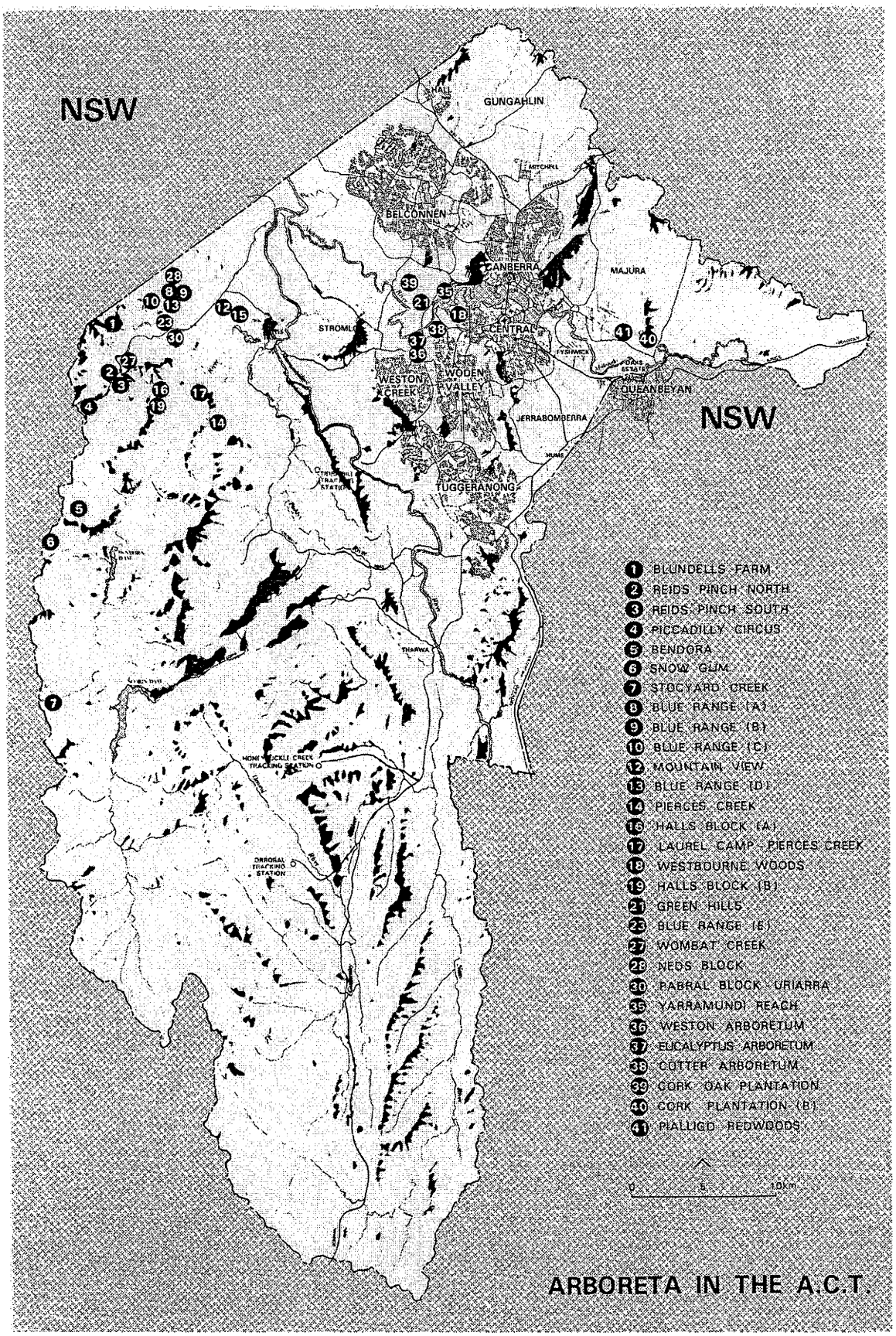


*Figure 1: Map of ACT arboreta*

*Source: Chapman and Varcoe, 1984. p.22-23*

The arboreta were measured continuously for over 30 years. The last measurement was in 1974, followed by a comprehensive review undertaken by Fearnside and Lee in 1984. The 2003 fires also provided a catalyst for their final measurement, before the burnt arboreta were felled.

Bendora Arboretum, the survivor, has been identified as being of significant heritage value. Not only is it the only upland arboretum to survive intact, but it is also provides a heritage link for Namadgi National Park, which lost many huts and other cultural artefacts in the 2003 bushfire.

**FACTA**

FACTA formed in February 2003. A couple of foresters who were passionate about arboreta were devastated by the outcome of the fires. Immediately they formed a 'Friends of' group. One of the members, knowing a bit of my background, asked me if I was interested.

At this point I should reveal a little about myself. I studied Amenity Horticulture at Charles Sturt University, before furthering my education and studying Forestry at the Australian National University. After these studies, I worked in the outdoor education industry. I found teaching many outdoor activities to young students to be enjoyable, so I returned to study, and learn about science communication. My involvement in FACTA started as a helping hand, and evolved into more.

Currently the FACTA group is small. There are about 10 people that are active members – attending meetings, writing letters and organising and attending field trips.

Overall, there are about 30 members of FACTA on the newsletter mailing list who receive information about upcoming events and they too participate in field trips. There is also a large number of people who, though not members, attend FACTA field trips and are interested in Bendora Arboretum and other arboreta.

Currently there is not a set membership and the actual organisation of FACTA is being revised, with the possibility of introducing memberships and other benefits.

**Communication about ACT arboreta**

The current state of communication information about ACT arboreta is relatively small. In my literature survey only six publications relate directly to the ACT upland arboreta. Of these, the early publications, between 1954 and 1974 specifically relate to scientific information and the growth rates of the trees in the arboreta. From the 1980s the main scientific value of the arboreta was largely fulfilled and there was a shift to encourage the public to use the arboreta. The publication "The guide to arboreta in the ACT" (Chapman and Varcoe, 1984) included information of how to get to various arboreta, activities and interesting tree information.

Often the 1980 information identified Blundells Arboretum as an important recreational arboretum due to its age, proximity to Canberra and its ambiance. It was recognised through the development of interpretation signage, a self guided walk and regular conducted walks. One of the lowland arboreta (Westbourne Woods) has very limited signage, though there are regular walks every month. Many of the other arboreta were not maintained for regular public use.

At the April 2003 FACTA meeting, (Appendix 2) it was decided that there was a management and communication issue with the ACT arboreta and that there would be an investigation into funding sources.

FACTA soon decided that both an interpretation and a management strategy were required for Bendora Arboretum. These strategies would:

- provide guidance to the recognised landholders of the arboreta
- identify the issues surrounding arboreta management
- recognise that there are other arboreta in the ACT and try to maintain the link between them
- add value to the heritage value of the arboreta
- promote Bendora Arboretum for its educational and scenic values.

I was asked to write the Interpretation Strategy for Bendora Arboretum, and with this, there was the opportunity to use participatory action research.

### *Research aim*

To use participatory action research to develop science communication material for a community group.

### *Assumptions*

Several assumptions were made when developing this science communication material. The assumptions were that:

- due to Bendora Arboretum being listed on the Interim Heritage Places register, everyone will want to know about it
- there will be a difference in communication levels between foresters and public
- there is an assumed target audience for the interpretation material generated.

### *Resulting products*

Through my involvement in FACTA, and as part of this sub-thesis, a number of products for use by FACTA have resulted. These include:

- a Communication/ Interpretation Strategy for Bendora Arboretum and Hut (Interpretation Strategy for Bendora Arboretum)
- an "Arboreta of the ACT" display
- Postcards.

### *Approach*

Chapter 2 of this thesis is a review of relevant literature of arboreta and science communication. Chapter 3 discusses participatory action research (PAR) and similar research methods. Also included is the developed PAR research model, which was used for the Bendora Arboretum Interpretation Plan. Chapter 4 relays the results of what happened at each of the stages of the PAR model, and discusses the results, identifies key findings, issues arising and reviews the process used to develop the Arboreta of the ACT display and the FACTA postcards. Also included is a refined model of the PAR process, as a future reference. Chapter 5 is the actual resulting

product- the entire Bendora Arboretum Communication/ Interpretation Plan. The appendices include my field notes and FACTA meeting notes.

In the next chapter, relevant literature is discussed.

## Chapter 2: Review of related literature

This chapter reviews literature relating to arboreta and science communication, within the context of informing participatory action research.

The literature review of arboreta revolved around the following questions:

- What is an arboretum and why are arboreta important?
- How did arboreta evolve?
- How much knowledge is there about ACT arboreta?
- What is the current interpretation status of ACT arboreta?

Science Communication is reviewed under the following headings:

- What is science communication?
- Importance of science communication
- What are the methods of science communication?
- How can you gauge learning?
- Interpretation and communication

### *Arboreta*

In the arboreta literature review, I define the meaning of arboreta, relate some of their history and discuss their importance. I have also documented information about arboreta in the ACT.

**What is an arboretum and why are arboreta important?**

Arboreta and Botanic Gardens have very similar meanings. Wyse Jackson and Sutherland (2000) from the International Agenda for Botanic Gardens in Conservation developed the following definition of a botanic garden:

> Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education. (p.27)

This is the international definition for a botanic garden.

To research the term Arboretum, two dictionaries were consulted.

The Oxford English Dictionary (1989) 2nd Edition, (I- Bazouki):

> Arboretum (pl -a) a place devoted to the cultivation and exhibition of rare trees; a botanical tree-garden.

Collins English Dictionary (1998)

> Arboretum (pl –a) a place where trees or shrubs are cultivated for their scientific or educational interest.

Both of these dictionaries refer to trees. One mentions rare trees, and the other specifically mentions science and education. The Encyclopaedia of American Forest and Conservation History (Davis, 1983) states that:

> The main distinction between arboretums and botanical gardens lies in the fact that an arboretum emphasizes the growing of woody plants while in a botanical garden all types of plants are grown. (p.23)

This American source emphasizes that woody plants are grown in arboreta and that both the arboretum and the botanical garden are very closely associated. The article also identifies the aim of a botanic garden/ arboretum as:

> Serving as a natural conservancy as well as a field station dedicated to research, and a scientific, educational and intellectual institution. Each of these aims complements and reflects the needs of the others. Among their many functions can be listed careful documenting, labelling, and detailed recording of the collections; testing plant materials and growing conditions; developing new and improved varieties; introducing new species; providing the public with both education and information; conducting taxonomical research; sponsoring botanical explorations; maintaining slide photograph, and library collections as well as the numerous specimens, grounds, and greenhouses. (p.23)

This reference has expanded the aim arboreta so it has a scientific purpose, it can be used by the public for education and information as well as being available for other pursuits such as photography.

The Royal Australian Institute of Parks and Recreation (1984) identified the meanings of botanic garden and arboreta as follows:

> Botanic Gardens are primarily scientific institutions established to collect, study, exchange and display plants for research, education and enjoyment. Arboreta are essentially Botanic Gardens in which the collections are limited to woody plants, especially trees, whose growth may be individually recorded. (p1)

This definition confirms the importance of science in arboreta and identifies arboreta as a type of botanic garden, but it has a more science related purpose ("individually recorded").

The Encyclopaedia of American Forest and Conservation History (Davis, 1983) highlighted that science and education were part of an arboretum.

> In keeping with its educational aims, many varieties of trees and shrubs are labelled and carefully documented. As with the other arboreta(ums) and botanical gardens in the country, the (National) Arboretum seeks to blend both aesthetically and artistically the natural and the artificial, the wild and the cultivated, the native and the foreign. (p24)

It introduces the idea of landscaping and meshing the old and the new, in an ordered or an unordered fashion.

Banks (1995) highlights the definition of an arboretum as

> ..... in effect, a tree museum. They are quite simply grown for themselves, their beauty and for people to admire and respect. (p.22)

This statement emphasises the science aspect as well as introducing the recreational features of an arboretum. It suggests that arboreta have also been planted for their aesthetic value and gives the main focus to trees.

Summing up all the literature, an encompassing definition could be - an arboretum is a collection of living woody plants for the purposes of scientific research, conservation, display, education, recreation and enjoyment.

**How did arboreta evolve?**

Arboreta essentially evolved as a form of science research and then for personal enjoyment. Due to the closeness of the definitions between botanic gardens and arboreta it may be necessary during the course of this review to include information relating to botanic gardens as there is limited information regarding arboreta. It should

also be noted that *Arbor* is latin for tree and an arboretum relates to a planting of trees, which is likened to forests, which in turn relates to forestry.

In early times, gardens were regarded as spiritual places. People could identify a place as the supposed "Garden of Eden".

> When it turned out that neither East nor West Indies contained the actual Garden of Eden, men began to think, instead, in terms of bringing the scattered pieces of the creation together into a Botanic Garden, or new Garden of Eden. (Prest, 1981, p.9)

They could have been regarded as a place to worship as they could contain many different parts (plants) of the world.

By the sixteenth century, "Physick gardens" had emerged. Their role was to encompass culinary requirements and plants for medicine and they were associated with universities – the places of learning. There was also the belief that gardens contained plants that were important to life. Physick gardens were a place where:

> All plants were believed to contain 'virtues' or healing powers, and in the garden into which plants had been gathered from all over the world there would be no hurt without a heal. (Prest,1981, p.57)

Over time, towns expanded and landscaping was introduced to towns, it "became acceptable to combine beauty with science" (McCracken, 1997). The public became more aware of the unusual plants that the newly discovered countries offered and they wanted to see them in a garden. In fact,

> .... although the great voyages of global discovery had occurred 200 years earlier, it was not really until the eighteenth century that the general public became fascinated with the treasures of other lands ..... the new botanic gardens did not merely thrill the pioneer botanists; perhaps more significantly it stirred the lay public's curiosity about the plant kingdom and heralded the birth of gardening for the ordinary person. (p.1)

The botanic gardens had developed into places where plant collectors could nurture rare and unusual plants.

By the late 19th Century there was a network of botanic gardens across the British Empire. Their importance for the collection and distribution of international plants

was foremost in botanical history for economic, scientific and social reasons. Arboreta were first planted in Britain as plant collectors returned with many unusual plants and trees from distant countries. These have since been described as "tree museums" and were "jealously protected" (Banks, 1995. p.22).

Arboreta were now growing. They had the important role of containing trees that could possibly grow in the area and test their purpose - whether as a resource or a feature. Over time, an arboretum became a site to examine many different tree species from around the world, all in the one place.

McCracken, (1997), suggested that:

> ..... one of the most important but least appreciated functions of (colonial) botanic gardens was their impact on forestry. In many respects, looking at the imperial botanic network as a whole, the production and distribution of saplings eclipsed work done on any other variety of economics. Trees were mainly produced for their fruit or for the silk industry, but they also had a host of other uses for a young colony. (p.141)

McCracken continues to discuss the establishment of trees for timber and firewood, for distributing tree species for windbreaks, shelter and resources. For example Black wattle, (*Acacia mearnsii)* was used for tannin in the 19th Century. Forestry, as a profession, began with the first forestry school being established in Germany in 1789 (Kanowski 2001). So, by this time, foresters were encouraged to plant many different trees to beautify areas and to create a "healthier town", and so the botanic garden network began to advance the cause of forestry as well.

The development of botanic gardens began in a modest style with the discovery of new countries and new plants. From this beginning, botanic gardens and arboreta made an impact on forestry, landscape design and horticulture.

**How much knowledge is there about ACT arboreta? What is the current interpretation status of ACT arboreta?**

Literature specifically about Arboreta in the ACT is varied. From the 1950s, a few articles about ACT arboreta were written, a process which continued in a sporadic way till recent times.

One of the first articles about ACT arboreta appeared in the 1954 papers that were presented at the first conference of the Institute of Foresters of Australia. This paper is crucial to the understanding of why arboreta were first established in the ACT.

> The purpose of the Arboreta programme is to determine the best species, varieties and strains of trees for forest planting in the southern highlands of eastern Australia and to provide material for breeding special strains of trees. (adapted from Fielding and Nicholson, 1954, p.2)

This paper provides a substantial outline of the ACT Arboreta, notes the species and then presents the findings of the work that was conducted at the various Arboreta. Importantly it clearly identifies *Pinus radiata* as the species most suited as a fast growing timber in the ACT region. Even though by this time, forestry areas of southern Australia were already planted with *Pinus radiata* the ACT arboreta confirmed its suitability and its capability especially when compared to many other potential trees.

The Forestry and Timber Bureau published a technical note about Arboreta in the ACT in 1974 (Rout and Doran, 1974). This technical note provides a valuable snapshot of the progress in growth of arboreta at that time. It confirms that *Pinus radiata* "will remain the preferred species for commercial plantations" (Rout and Doran, 1974 p.4). The note also compares other species found in the arboreta and their potential as a timber tree must be comparable in growth and utilisation potential" (p.3). Rout and Doran state that the ACT arboreta have fulfilled their main role as trial plots:

> The arboreta have largely fulfilled their role as species trials and there are no plans for continuing the introduction of substantial numbers of new species. (p.4)

The ACT arboreta are often located within pine plantations and Namagi National Park. The Australian Department of Agriculture (1975) described the role of the ACT plantations shifting from landscaping and catchment protection purposes with a view to commercial production. It was stated that:

> With little cost and some imaginative presentation, much of this special knowledge can be produced in a form to instruct, educate, amuse and stir the imagination of the visitor to the forest: by displays, special publications, interpretive signs, well-designed nature trails, conducted tours and so on. (p16)

Although this shift towards public use generally refers to the ACT pine plantations as a whole, it can also be interpreted to include the ACT arboreta.

Now that the arboreta had fulfilled their initial role, it was another ten years before the ACT arboreta were discussed in publications.

In 1984 "A guide to arboreta in the Australian Capital Territory" was published (Chapman and Varcoe, 1984). This publication presented a concise description of the ACT arboreta, and drew on their objectives-scientific, education, historic, recreational and National Heritage. It emphasised that the arboreta had a direct impact on Canberra:

> The garden city concept for Canberra, in which trees play a major role in landscape design, required intensive comparative studies of both exotic and native plant species. (p.5)

Many trees planted in the ACT arboreta were also identified as being suitable to plant around Canberra in gardens and along streets.

Also mentioned in this guide, is that some of the arboreta were falling into disrepair and that they were being managed by different landholders:

> Few of the arboreta are currently managed for their original purpose and may have been abandoned. Responsibility for the arboreta now rests with the Commonwealth Department of Territories, ACT Parks and Conservation Service. Most urban sites are managed by the City Parks Section of the Land Management Branch and rural sites are managed by ACT Forests and the Regional Land Management Section. (Chapman and Varcoe, 1984, p.5)

This guide also mentions that the rural arboreta are managed by ACT Forests and a number of research organisations are using them.

> Research interest in rural arboreta has been maintained by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian National University School of Forestry and, to a lesser extent, the personnel of the Australian National Botanic Gardens. (Chapman and Varcoe, 1984, p.6)

It would have been the CSIRO measuring the trees, the Australian National University using the arboreta as a teaching resource and the ANBG as a part of their botanic garden network.

Arboreta were also considered a community resource and the report "Arboreta as a Community Resource" by Barton, Goodwin and Stephenson (1985) discussed the option of utilising one of Canberra's rural arboreta. This publication explored the possibility of developing one of the arboreta to include interpretation features as well as its potential to become a popular destination for Canberra people.

> The development of Blundell's Flat in this way is seen as the first step in bringing all the arboreta to the community's notice. (p.iv)

This was a significant step in encouraging the public to utilise Blundells Arboretum.

Blundells Arboretum was recognised as the arboreta with the most potential (p.6) as it:

- was the oldest arboretum in rural ACT
- was the largest arboretum in rural ACT
- was one of the largest collections of exotic tree species outside of the Botanic Gardens of Australia
- has attractive healthy stands of mature trees including large diameter *Pinus radiata*.

The subject of this sub-thesis is Bendora Arboretum, and it should be noted that Barton, Goodwin and Stephenson (1984), commented that Bendora features included (p.6):

- well stocked and healthy trees
- a display of the adaptability of *Pinus radiata* (Monterey Pine) to unfamiliar and marginal conditions
- an excellent plot of *Pseudotsuga menziesii* (Douglas Fir)
- many species that were not represented in other ACT Arboreta.

Barton, Goodwin and Stephenson (1984) also provided a start for student assignments. Students, such as Terry (1993) drew on ideas that were provided for Blundells Arboretum and they developed some new ideas such as interpretive sheets and other

student activities. The importance of Terry's paper is that Blundells Arboretum was thought to be a valuable tree-interpretation resource as well as of interest to the general public.

By 1994, work had been done on the collection of native plants in Australian botanic gardens and arboreta. It was recognised that there was an inadequate approach to the management of Australian botanic gardens and arboreta, and that a coordinated national program should be initiated because it had social, economic and scientific benefits. This work began by listing botanic gardens and arboreta in Australia that contained native plants and became a precursor to the "Directory of Australian botanic gardens and arboreta" (Fagg and Wilson, 1994). This publication listed all gardens and arboreta around Australia, and presented additional information including the percentage of native species that are planted in all the gardens and arboreta and statistics on the people who actually visited gardens. However, none of the ACT arboreta was listed in this publication, although the National Botanic Garden was. In more recent times the directory has become available on the website and Blundells Arboretum was included (ANBG website, 2004). However more recently, Blundells Arboretum has been removed from the directory (ANBG website, 2005) as the arboretum was burnt.

In 2004, FACTA recognised the heritage, cultural and natural importance of Blundells Flat. In response they produced a report "*Blundells Flat area ACT: Management of Natural and Cultural Heritage Values. Background Study for the Friends of ACT Arboreta*" (Butz, 2004). This document captured information on the Blundells Flat area in am effort to consolidate the areas importance.

In the limited articles about ACT arboreta, there is a natural progression. The articles written about the ACT arboreta began as being scientific. After a break of a decade or more, the arboreta began to show promise of another use- the enjoyment of their scenic beauty-and articles were written about interpreting and enjoying this resource.

**Summary**

An arboretum is a collection of living woody plants for the purposes of scientific research, conservation, display, education, recreation and enjoyment. This definition follows the history of arboreta as being established for scientific research and conservation for plant collections and identifying tree uses. Arboreta became a display of trees for people to view, especially those from "foreign lands." They are an educational resource, used to teach people about unusual or foreign trees. Arboreta also serve a recreational function and are also for personal enjoyment.

ACT arboreta were established to determine the best species, varieties and strains of trees for forest planting in the southern highlands of eastern Australia and to provide material for breeding special strains of trees (Fielding and Nicholson, 1954). By 1974 they had essentially fulfilled the research role and by 1984 there was a new use for the ACT arboreta. They had become more of a destination, than a scientific measuring plot.

## *Science communication*

**What is science communication?**

Science communication has been defined many times and three recent definitions are as follows:

Sainsbury and Dexter (2000) defined science communication.

It is communication between

- groups within the scientific community, including those in academia and industry
- the scientific community and the media
- the scientific community and the public
- the scientific community and the Government or others in positions of power and/ or authority
- the scientific community and the Government , or others who influence policy
- industry and the public
- the media (including museums and science centres) and the public

- the Government and the public. (p.12)

This definition essentially has captured all the possible markets with whom to communicate science. It encompasses the whole of human society and its various aspects. It is about a relationship between science and society.

Burns, O'Connor and Stocklmayer (2003) defined science communication as

> the development, application or study of various skills, media and activities with the purpose of making meaning of a message. The message relates to *science*, and the opportunities and constraints for the meaning-making process are provided by *communication* theory and practice. (p.194)

This definition delves more into the methods of science communication and what the actual science message is for. It is a medium to communicate a science message.

In 2003, Bryant, defined Science Communication as

> the processes by which the scientific culture and its knowledge become incorporated into the common culture. (p.357)

This suggests that science communication should be embedded into everyday events.

From these three definitions, it could be considered that science communication is about a relationship between science and society, it is a medium to communicate a science message as well as a process that involves science being part of everyday life. Science communication hopes to raise the awareness of science in society.

Communication has been defined by Cribb and Hartomo (2002), as the

> sharing of ideas and meaning .....in which messages, opinions and information come from all sides, are received, considered and discussed until a common understanding of what they mean is attained. (p.16)

Communication is an interactive process of learning through discussions, exchange of ideas, and awareness of an issue. Through this process, better informed decisions should be made.

Science communication allows dialogue between scientists and others (such as the general public or other scientists). It should raise and answer questions relating to science information and its application and should allow people to make informed

decisions, not necessarily because they fully understand the science, but because they are more aware of the science.

As Shortland and Gregory (1991) wrote

> On the whole, scientists are no better and no worse at communication with the public than any other group of highly qualified specialists; but they now face a new and urgent challenge: the public is suddenly very interested to hear what scientists have to say. In the past, some scientists' attempts at communication have turned out like a garden cultivated by neglect: the flowers are in there somewhere, but the public has to fight its way through a tangle of weeds in order to see them. The public's need for accessible, succinct and reliable information means that scientists must cut a way through the tangle and keep the paths clear. (p.1)

Science communication fulfils the need that scientists need to communicate their information to the public and others, because of interest in the science aspect. The best way is to achieve this is through keeping the communication channels open.

**Importance of science communication**

Why is science communication required? Why should scientists make society aware of their science? There are a number of reasons that have been described by many different authors.

To quote Cory Dean, a senior journalist from the New York Times, three main reasons for science communication are:

1. "Public accountability, because most research is funded by tax dollars
2. Providing scientific information with which the public can make important decisions about matters which impact on the life of the community.
3. The need for a scientifically literate workforce." (Martonovich, 1998 p.46)

Shortland and Gregory (1991) support these three points.

> But scientists know that the scientific enterprise needs public support and approval, and even the stuffiest are now beginning to admit that communicating science- even if they wouldn't do it themselves- is something that needs to be done. More and more scientists are beginning to see the merits of explaining their work to the public and are being invited to do so. (p.6)

Blum and Knudson (1997) also confirm Martonovich's points:

> ... at the same time, organizations are increasingly recognizing how important their various constituents are to their own well- being and survival. So they develop special programs and publications- research magazines, newsletters and newspapers, brochures to keep those constituents informed about their activities and to generate interest and involvement. (p.214)

Science communication is about sharing science. It has evolved from the necessity of the public and colleagues wanting information, to ensure that public money is spent appropriately and to ensure future scientific research is supported. Importantly, science communication informs the public and other colleagues about current and relevant research.

**Methods of science communication**

If science communication is important to encourage support, further research and knowledge, then a key element of science communication is to ensure that the science message is targeted appropriately.

> Science communication activities have always recognised that there is more than one 'public' dividing audiences into different ages and socioeconomic groups. This research shows that attitudes to life influence attitudes to science, which may be helpful in bringing science communication messages to as wide an audience as possible. (Sainsbury and Dexter, 2000, p.66)

Science communication must be targeted to the respective audiences. Different people will be more interested in information relevant to them. Targeting also ensures that their needs are met.

Stocklmayer (2001) emphasised that it is important to "know the audience and to tailor the communication expressly for them." Ways to do this include:

- getting rid of as much mathematics and formulae as possible
- keeping the language as straightforward as possible
- thinking about the possibility of alternative conceptions
- concentrating on finding good introductory 'hooks'

- keeping it simple
- keeping it simple and
- keeping it simple. (p.19)

Even the most complex science should be communicated in a simple and easy to understand manner. However, over-simplifying information may be seen as "talking down".

Of the identified methods, the "hook" is a very important. Sainsbury and Dexter (2000) identified that:

> ...while stimulating and informing an inclusive debate involves the dissemination of scientific information, it also requires the identification 'hooks' which link in with people's everyday lives and concerns- so that their attention is attracted and information retained. This will allow people to develop an awareness of the role of science in their everyday lives, and provide them with the information and confidence to contribute to national debates about science policy. (p.13)

Not only will a "hook" grab the attention of the intended audience, but it should also identify the relevance of the science to the ordinary life. It should provide a familiar association of a useful or everyday event for the recipient. The report also states that information about the sociodemographics, media usage and leisure interests of the target audience need to be seriously considered.

> 'Hooks' can be identified that will attract people to take a more active interest in science and scientific issues. (Sainsbury and Dexter, 2000, p.66)

There is no set medium to communicate science information. For the communication of pure scientific results it is common practice to publish these in a specific journal, which is often peer reviewed. However, the public are very important to the scientist. They need information in a variety of ways. Cribb and Hartomo (2002, p.110-114) list a range of communication methods that are effective for engaging the public in a dialogue about science and technology issues and developments. Methods to engage the public are through:

- National and local consultations
- Citizens' advisory panels

- Lay members of science committees
- The web
- Public opinion research
- Media analysis and journalists' workshops
- Consensus conferences and citizens' juries
- Foresight projects
- Industry seminars
- Newsletters
- Labelling
- Radio and video
- Open days and open laboratories
- Specialist media
- Shopping centre displays
- Museums, science centres, galleries
- Science circus and drama
- Teacher conferences
- Politicians
- Religious institutions
- Non-government organisations
- TV chat shows.

Many of these media are of an informal nature-there is often no peer review involved. Many are activities that ordinary people do, therefore, these media can often reach a wide range of people rather than a particular group of people that read a particular science journal. These methods should not detract from the normal scientific protocol of publishing in journals and having work peer reviewed. They should enhance the communication dialogue.

The science communication media can initiate the interaction with society and create the ongoing dialogue. However, even though we communicate science, it does not necessarily mean that the intended message is understood. The message needs to suit the audience in a way that they will understand.

> Explaining a problem will not lead to an understanding unless the learning has an internal scheme that maps onto what a person is hearing. Learning is the product of self-organization and reorganisation. (Yager, 1991, p.55)

Yager, (1991) stated that knowledge is not acquired passively and that the Constructivist model is based around local issues and local resources. The model has the:

> .... emphasis on the learner, we see that learning is an active process occurring within and influenced by the learner as much as the instructor and the school. (p.53)

Constructivist learning entails actively engaging the participant in their learning process and it is often used in informal science communication. Stocklmayer (2001) identified important aspects in Yager's paper in relation to informal science communication:

These are:

- Using open-ended questions
- Encouraging participants to suggest causes for particular events and predictions of consequences
- Encouraging the testing of the participants' own ideas
- Encouraging participants to challenge conceptions and ideas
- Using cooperative strategies that emphasis collaboration, respect, individuality and use division of labour
- Encouraging adequate time for reflection and analysis, respecting all ideas
- Encouraging self-analysis, collection of real evidence to support ideas, and re-formulation in the light of new experiences
- Encouraging the use of alternative sources of information, both in written materials and in the use of experts. (Stocklmayer, 2001, p.9 and Yager, 1991, p.56)

These aspects challenge the learner to organise their thoughts and truly understand their subject. They encourage exploration of a topic, seeking further information and finding similarities and differences between old and new information. There is no single solution to learning, however constructive principles should also guide participants to stay on track, to encourage them through diversions to find an answer.

As quoted by Shortland and Gregory, 1991,

> Communication is not a science: there is no single 'correct' way to get your message across. What is required is practice, and that means hard work, making mistakes, recognizing your mistakes and putting them right. (p.4)

**Gauging learning**

Is it possible to gauge the learning effectiveness of communication? Is it possible to define how much people learn from science communication?

For communication to be regarded as effective, it must be an interactive process. Cribb and Hartomo, (2002) identified measures of successful communication as:

> Measures of success can range from evidence of greater awareness among certain audiences, to customer satisfaction rating, increased adoption of advice or technology, and greater public and political consensus on a way forward. (p.34)

Success in communication cannot be measured in a tangible manner such as through how many presentations were done.

Bryant (2003) supports this statement, referring to science awareness as implying:

> .... that an affective change has taken place in the observer, that he or she feels comfortable with science, may even have a sense of ownership and pride in it. It emphasises the importance of participation. (p.361)

Sometimes the recipient of the science communication can feel that they have contributed to the science in some manner- it has generated a sense of ownership.

Actually measuring how effective science communication is can be quite difficult.

> Success tends to be measured by numbers attending and quality of the experience, rather than by the impact or effect of the activity, especially in the long term. (Sainsbury and Dexter, 2000, p.66)

Whereas science communication includes the use of media to deliver a message, the actual retention of the message by the recipient, and if it is relevant, is very hard to gauge.

**Interpretation**

Interpretation can be seen as a method of science communication. Interpretation aims to:

> .... stimulate, facilitate and extend people's understanding of place so that empathy towards heritage, conservation, culture and landscape can be developed. (Stewart, Hayward, Devlin and Kirby, 1998, p.257)

This aim is a form of science communication. It tries to achieve understanding from the participant or visitor, through displays or information. They include the interpretation of geography, geology, ecology and other sciences. Stewart, Hayward, Devlin and Kirby, (1998, p.257) explained:

> Interpretation is a process, which aims to reveal meanings of places, to provoke thought about places and to essentially to make the link between people and places.

It is the process of communicating the significance of a place to visitors, so they can understand its importance. It can influence people's attitudes to the environment, provide insight to the location and enhance their visit.

Interpretation which generates empathy with, or of, a place was a valuable theoretical contribution.

> The overriding message from this study to interpretive planners, providers and researchers is that if the development for a field of care 'sense of place' can be enhanced for visitors by interpretation, then interpretation, if executed well at this and other places could have a cumulative effect encouraging the desired development of empathy for conservation, heritage, culture and landscape. (Stewart, Hayward, Devlin and Kirby, 1998, p.265)

The more common methods of interpretation include displays, signs/ labels, visitor centres, leaflets and tours.

A report on the Collection of Native Plants in Australian Botanic Gardens and Arboreta (Royal Australian Institute of Parks and Recreation, 1984) describes a concern about interpretation facing the botanic gardens and arboreta in the early 1980s:

> Great variation exists between gardens in the standard of public display and the degree of interpretation provided. Labelling of plants in many gardens and arboreta is extremely poor and at times old or incorrect names are used in error. (p.15)

Labelling in this quote should also include displays and signage. From this quote it is recognised that interpretation in the garden environment is important, yet at the time of the article it was often inadequate. The level of vandalism that the signs or labels may receive also has an impact on the level of interpretation used. Interpretation also includes other methods than labelling.

> Other interpretative programs such as displays, publications, guided tours and children's activities are used to varying degrees by essentially as yet only by the major gardens. ((Royal Australian Institute of Parks and Recreation, 1984, p.15)

**Summary**

Science communication is a two-way learning process. It fulfils the need for science to be accountable, share knowledge with the public and gain further information and funding. Through the use of a "hook" and a range of media, there can be a 'conversation' between society and science. However, because of this conversation between science and society, it does not necessarily mean that information is learnt or is correct. People will need to relate information to the way that they learn. Knowing this, targeting information wisely can influence this process.

In the next chapter, participatory action research and similar social research methods are discussed. My participatory action research model used for developing science communication material is also identified.

# Chapter 3: Understanding participatory action research

## *Introduction*

An important part of an arboretum is that it can be used by a wide number of people. Banks (1995) stated that:

> An Arboretum should belong to the whole community and that the members of that community should be encouraged to feel a part of this living growing medium. (p.23)

With the community having an important role in the Communication/Interpretation Strategy for Bendora Arboretum and Hut, participatory action research was chosen for this project.

Research can involve qualitative and quantitative methods, or a mix of both. As I was producing communication material, I decided to use qualitative information, obtained through a case study of Bendora Arboretum. This case study is a real situation, which happened between April 2003 and October 2004. There are three direct outcomes from this work with the main one being the Communication/Interpretation Strategy for Bendora Arboretum and Hut.

Action research, participant observation and case study are all social research methods that contribute to participatory action research (PAR). They all differ in various aspects, yet they are very similar in their requirements. In this research, I have made brief notes on each of the mentioned research methods and their relationship with participatory action research.

### Participatory action research

Participatory action research (PAR) is an evolving approach to research and the production of knowledge (Smith, 1997, p 173).

PAR can be about the empowerment of people, whether through their liberation or a new decision making processes. PAR is a praxis:

.... the participants' questions belong to them-they develop ownership over what is pursued and how. In PAR, research questions take on many forms; they can be written down or remain oral, be formally or informally worded, and be simple or complex. They are not predetermined; no one person or sub-group enters the process with the major question(s) already specified on behalf of the group. The groups' questions can change with experience over time as new, more relevant queries are discovered. Experience will be the significant teacher; as the group members gain experience, their work together will mature. (Smith, 1997, p.211)

Participatory action research is about individuals and groups researching their personal beings, social-cultural settings, and experiences. They reflect on their values, shared realities, political resistances, and collective meanings, needs and goals (Willms, 1997, p.7). PAR is a journey, as it is about movement:

.... movement from the way things are to the way things could be. It is about transformation on both personal and social levels. At the heart of this transformation is a research process which involves investigating the circumstances of place; reflecting on the needs, resources, and constraints of the present reality; examining the possible paths to be taken; and consciously moving in new directions. (Smith, Willms and Johnson, 1997, p.8)

PAR is an evolving approach to research and the production of knowledge. Smith (1997) conducted research over several countries with the result of strengthening their commitment to a meaningful way of life, such as for liberation. The information that is gained can also be applied in general and environmental research, such as through the work of by Carberry, Hochman, McCown, Dalgleish, Foale, Poulton, Hargreaves, Hargreaves, Cawthray, Hillcoat and Robertson, (2002) through FARMSCAPE. FARMSCAPE uses participatory action research as an approach to integrate decision support to farmers, through iterative cycles of action, reflection and re-design over a 10-year period.

Participatory action research is a combination of both action research and participant observation achieved through a case study. It is a reflection and action cycle, which is sparked by people's needs. It is ever-changing and ongoing, having no clear boundaries, and recognizing that transformative processes are never completed.

Ottosson (2003) states that the researcher is also a participant and this distinguishes it from action research. The principles of PAR are (adapted from Smith, 1997, p.183) that it should:

- intend liberation
- develop a compassionate culture
- participate in cohesively dynamic processes of action-reflection (praxis)
- value what people know and believe by using their present reality as a starting point and building on it
- collectively investigate and act
- consciously produce new knowledge.

Smith, 1997 provided a more complex framework for PAR (Figure 2).

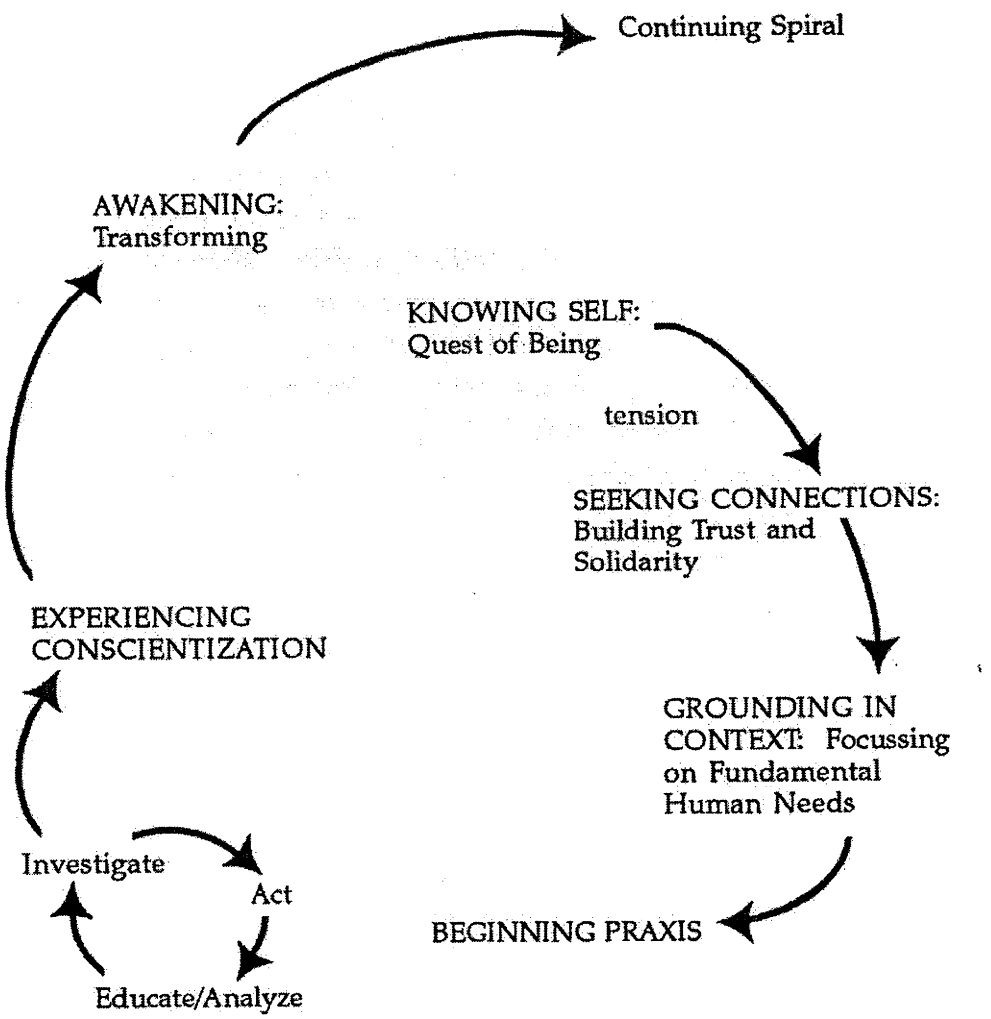


*Figure 2: The framework for participatory action research praxiology*

*(Source: Smith 1997, p.198)*

PAR is an evolving approach to research and the production of knowledge (Smith, 1997, p.173).

The underlying values of PAR remain essentially the same:

1. All people have the capacity to think and work together for a better life
2. Current and future knowledge, skills and resources are to be shared in equitable ways that deliberately support fair distributions and structures
3. 'Authentic commitment' is required from external and internal participants. (Smith, 1997, p.177)

**Action research**

Action research, as defined by McNiff, (1988) is often educational research. It is a form of self-reflective enquiry often used in school, where the teacher becomes a participant in their own educational process. "The action of action research, whether on a small or large scale, implies change in people's lives, and therefore in the system in which they live" (McNiff, 1988, p.3).

The most widely accepted definition is:

> Action research is a form of self-reflective enquiry undertaken by participants (teacher, students or principals, for example) in social (including educational) situations in order to improve the rationality and justice of
>
> (a) their own social or educational practices,
>
> (b) their understanding of these practices, and
>
> (c) the situations (and institutions) in which these practices are carried out.
>
> (Carr and Kemmis, 1986 as quoted in McNiff, 1988, p 2)

McNiff (1988) also describes action research as "a self-reflective spiral of planning, acting, observing, reflecting and re-planning" (p.7). It is an evolving research method which attempts to improve circumstances.

Action research is a cycle of learning, through reflection and the constant changing of a situation. It is however, a research method where the researcher is an observer yet will still question actions.

> Action research is a process in which the researcher is not solving a problem *for* the other/s but *with* the others in joint learning. The knowledge is the action. (Ottosson, 2003, p.92)

Cherry, 1999 describes the Action research cycle as "a continuous cycle of planning, action and review of the action" (Cherry, 1999). Experiences are continuously recycled through reflection, planning and the injection of ideas. This is shown in Figure 3.

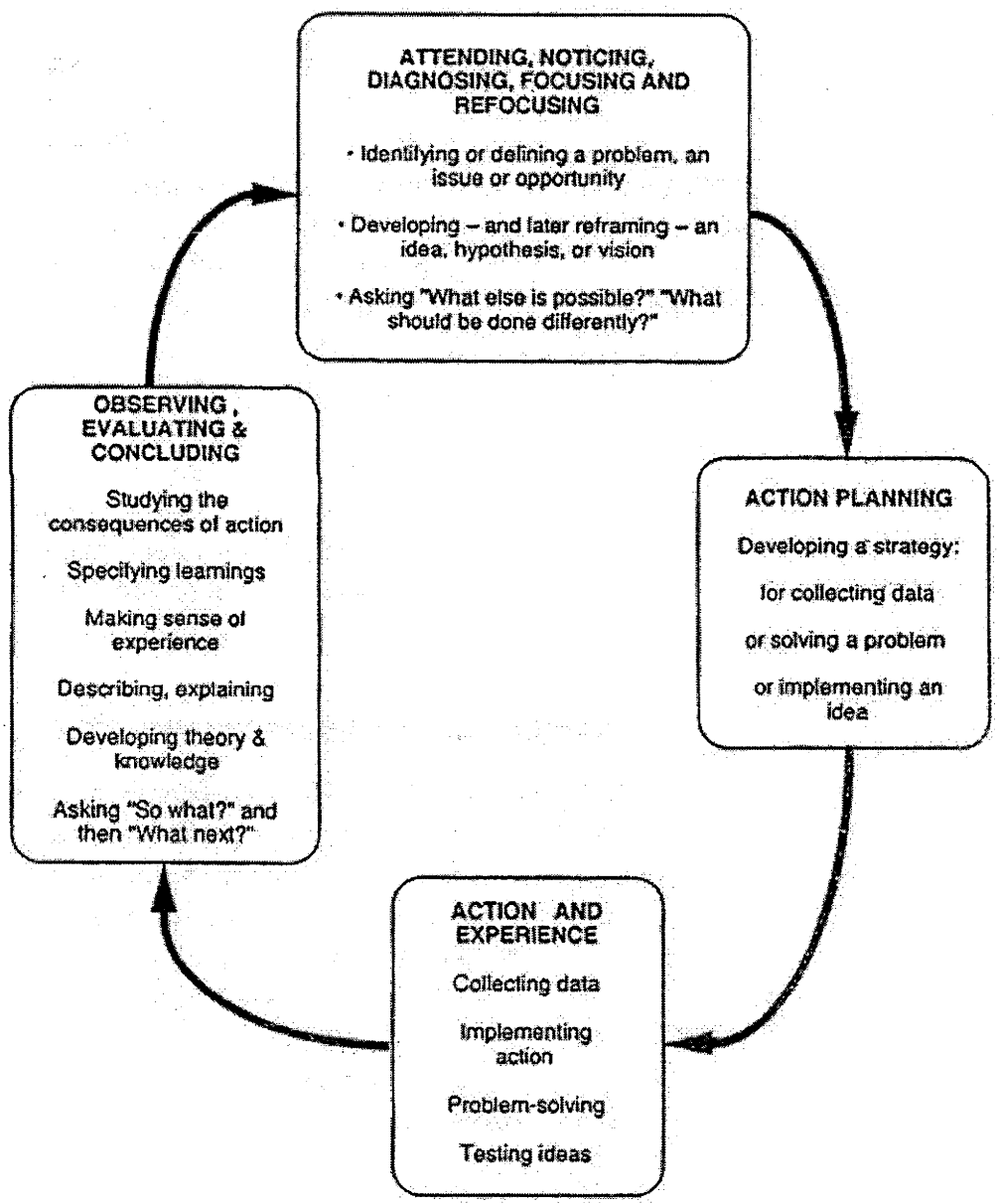


***Figure 3: The action research cycle***

*Source: Cherry, 1999. p.2*

**Participant observation**

The method of participant observation aims to generate practical and theoretical truths about human life grounded in the realities of daily existence. There are seven features identified by Jorgensen (1989, p.13):

1. a special interest in human meaning and interaction as viewed from the perspective of people who are insiders or members of particular situations and settings
2. location in the here and now of everyday life situations and settings as the foundation of inquiry and method
3. a form of theory and theorizing stressing interpretation and understanding of human existence
4. a logic and process of inquiry that is open-ended, flexible, opportunistic, and requires constant redefinition of what is problematic, based on facts gathered in concrete settings of human existence
5. an in-depth, qualitative case study approach and design
6. the performance of a participant role or roles that involves establishing and maintaining relationships with natives in the field
7. the use of direct observation along with other methods of gathering information.

Participatory action research uses all seven of the identified participant-observation features.

It is about everyday experiences of the ordinary, usual, typical, routine, or natural environment of human existence of which participant observation will note. The methodology of participant observation, however, generally is practised as a form of *case study* (Jorgensen, 1989, p.19).

**Case studies**

Case studies are regularly used in social research. They can be either single or multiple, exploratory, descriptive or explanatory. Case studies are not so much a research method, as they are a checklist. They are only one place, one time and one issue that it studied. However, case studies are the preferred strategy when "how" or "why" questions are being posed (Yin, 1994, p.1).

According to Yin, (1994, p.80), there are six sources of evidence that can be sought for case study research. These are

1. documentation
2. archival records
3. interviews
4. direct observations
5. participant-observation
6. physical artefacts.

Case studies are flexible and multipurpose. They may be descriptive, exploring providing portraits of little known entities. They may also be selectively pursuing more richly detailed accounts of processes at work. They may also be designed to achieve a form of experimental isolation of selected social factors within real life context (Shaw, 1999, p.135).

Participatory action research utilises the case study approach, by researching one circumstance thoroughly.

### *The research model*

Through being a member of FACTA, I could participate in meetings as well as develop science communication material. The process of developing the resulting material was documented to aid further processes and research.

Once the science communication material was developed I could then relate the process to a form of exploratory research whether it is action research, participant observation, case study, or participatory action research.

**PAR is a mix of social research methods**

From the preceding information it can be identified that PAR:

- uses knowledge as the action

- draws on the cyclic nature of action research, through the use of planning, action and review of the action.
- contains elements of participant observation, such as being a special interest in human meaning, and an everyday situation.
- utilises the case study approach by studying one topic.

There are no pre-determined questions in PAR research. It is continuously changing and adapting to the surrounding issues-it is about discovery.

**Developing my PAR model**

Having identified the similarities between the social research methods of action research, participant observation, case studies and participatory action research, the next step was to develop a PAR model that I could use for this sub-thesis. Initially I needed to accept the fundamental principles, which were those identified by Smith (1997).

**The principles of PAR (adapted from Smith, 1997, p.183):**

- intend liberation
- develop a compassionate culture
- participate in cohesively dynamic processes of action-reflection (praxis)
- value what people know and believe by using their present reality as a starting point and building on it
- collectively investigate and act
- consciously produce new knowledge.

For this sub-thesis, the PAR principle to liberate was not of a political view, but through providing a new decision-making process and to increase the knowledge base. To develop a compassionate culture, I needed to consult with the stakeholders and encourage or coordinate a dynamic process of action-reflection. Through using FACTA members to identify stakeholders, and their useful knowledge, I could begin the PAR process and generate new information and communication material.

I chose to modify my knowledge and base my research on the basic action research continuous cycle of reflection, action, discussion /observation cycle (Figure 4).

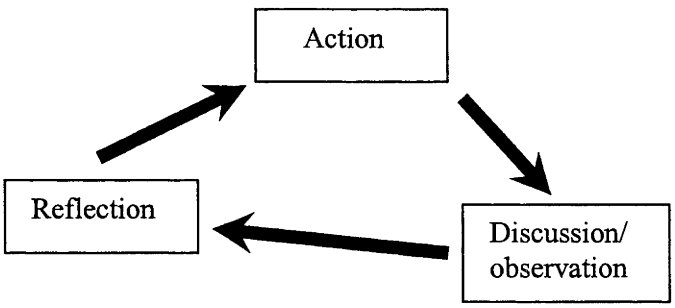


*Figure 4: The reflection, action and discussion/observation cycle of PAR*

The development of a PAR model used also used some action research principles. My method is diagrammatically shown in Figure 5. My aim was to follow through the action research cycle as much as possible, while being a participant.

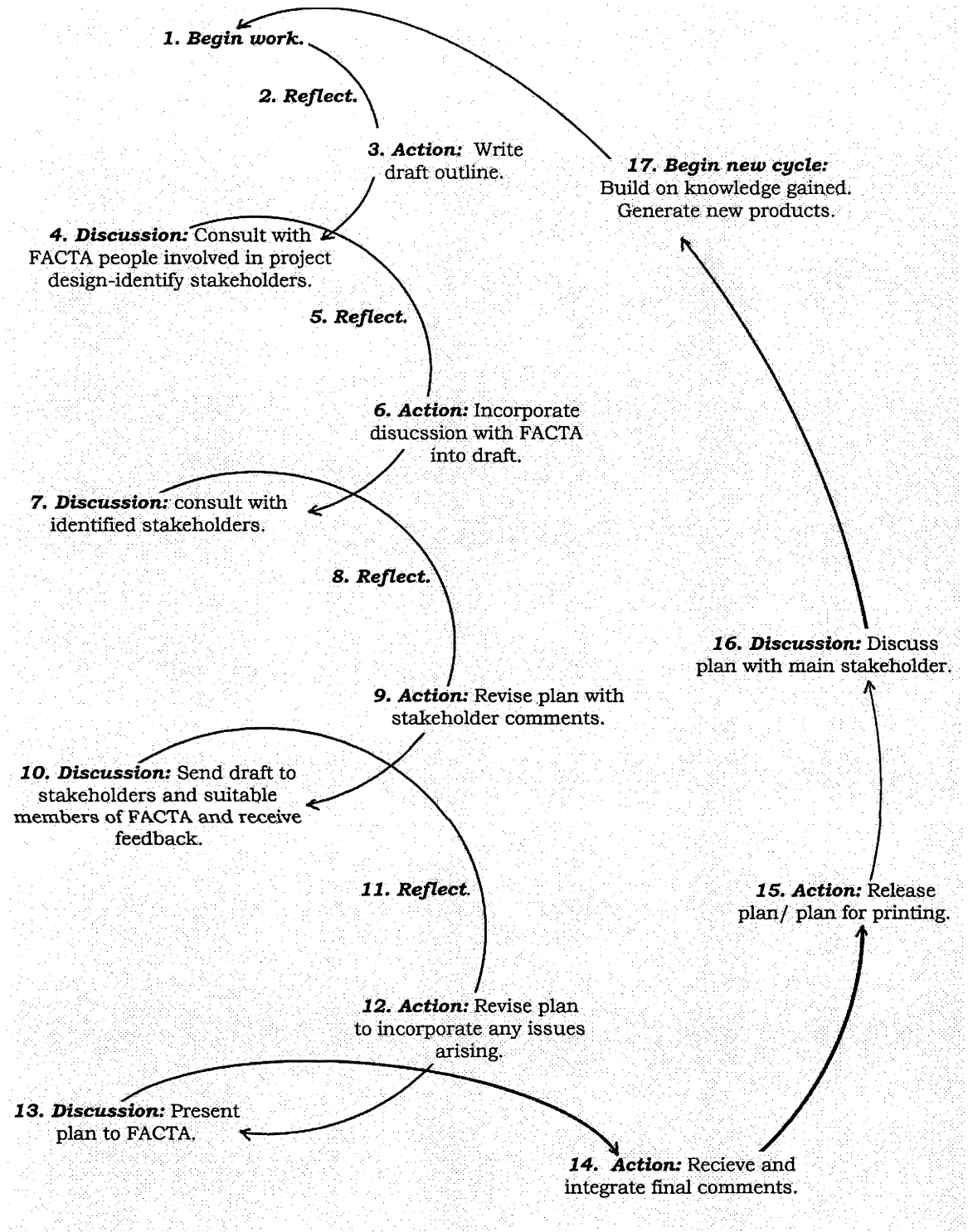


*Figure 5: Participatory action research model to develop science communication material*

Information was collated mainly through my field notes with various people, or from minutes from FACTA meetings. Meetings with stakeholders were not formally recorded, due to the considerable discussions held. However, the main points were

noted and are included in Appendix 1. The main question discussed was what they (the stakeholder) would like to have happen at Bendora Arboretum and Hut.

**Ethics**

Due to this work being social research, ethics approval was sought and approved (approval number 2004/201) (Appendix 4). The original intent for this approval was to conduct recorded interviews with each of the stakeholders as the final part of the PAR process, contributing to the discussion at stage 16 (Figure 5). However, the formal interview phase was not conducted due to the amount of data already obtained.

**The research grant**

A research grant of $5,200 (including GST) from the ACT Heritage Unit for the *Conservation of Bendora Arboretum and Hut* was approved in October 2003 (Grant no HG 03/13). The objectives of this research grant were to:

1. collect information necessary for the management / conservation of the arboretum
2. prepare a conservation management plan
3. prepare an awareness/ interpretation plan to include site and individual species labelling and a descriptive brochure.

My research was concerned with the third objective, guided by the FACTA (Interim) Committee developed into the Communication/Interpretation plan for Bendora arboretum and hut. I was paid a total of $1,444.90 to cover travelling, printing and writing costs (see Appendix 2). The main cost was associated with the display and its development. The expenditure of the research grant funds, were decided through FACTA meetings, in consultation with the ACT Heritage Unit.

The next chapter describes my journey through the presented PAR model (Figure 5). It also details the issues surrounding the research, key findings and the refined PAR model that could be used by other community groups.

## Chapter 4: Reflections on the process of PAR

In previous chapters, this sub-thesis discussed the topics of arboreta, science communication and participatory action research. The research method used in this sub-thesis was participatory action research in order to develop science communication material for a community group.

Following through the method presented in Chapter 3 (Figure 5) the method for each aspect of the research was as follows. This chapter, in accordance with the process of PAR, records my personal actions from December 2003 to December 2004.

**1. Begin work**

Date: December 2003

I received the information that allowed me to proceed with the development of the interpretation plan in late December 2003. The grant from ACT Heritage Unit had been approved, and my current position had come to an end, allowing me time to work on the interpretation plan.

***2. Reflect***

The last two weeks in December 2003 was the first reflection time. It included time to organise, and start to work out the approach for gathering information.

***3. Action:* Write draft outline**

Between December 2003 and January 2004, I had time to reflect on what I knew, what was wanted and how to proceed. I tried to identify the main stakeholders, my aim and my purpose for the document.

***4. Discussion*: Consult with FACTA people involved in project design- identify stakeholders**

Date: January 2004

Once I had a brief idea of what I wanted to do and what could possibly be involved, I then discussed this with the FACTA member who had received the grant from ACT

Heritage Unit. We discussed the possible stakeholders and meetings that should be held and information that would need to be sought.

The main points raised at this discussion were

- drawing up a 'matrix' to work out communication methods
- drawing up a 'matrix' to identify key stakeholders
- 'staging' the plan for implementation.

***5. Reflect***

This reflection time was shorter. It allowed me to think about the future strategy, to meet with the stakeholders and to consider whether any others should be involved.

***6. Action*: Incorporate discussion with FACTA into draft**

Date: January 2004

At this time a very rough draft had been assembled, and possible structure and headings were identified.

By now the draft included information on

- identified stakeholders
- key communication issues
- an outline for labelling and other interpretative means and signage plan.
- potential interest groups
- arboretum communication affiliations and networks
- key communication issues
- postcards.

***7. Discussion*: Consult with identified stakeholders**

Date: January 2004

Initially I met ACT Parks and Conservation with a FACTA member. The reason to meet with ACT Parks and Conservation staff was that Bendora Arboretum is in their National Park and they will have the main responsibility to implement some of the interpretation. The person that we met knew exactly what they wished to see at Bendora Arboretum. This is reflected in the field notes taken by me, in Appendix 1.

I then met with a representative of ACT Forests (with a FACTA member present) and then with two ANU Forestry lecturers who use Bendora Arboretum for teaching purposes.

ACT Forests are considered to be a stakeholder as they manage many of the other arboreta, which were part of the original "series" of arboreta, though now burnt. If some of the other arboreta were to be re-established, then it would be ideal for ACT Forests to know that this work was going on and that the 'series' look and feel could be used.

I also met with the ACT Heritage Unit, as they were giving FACTA money to complete this work.

Last, I also spoke with a Canberra historian who knew the history of the area well.

Several issues were repeatedly raised:

- Heritage week
- Signage
- Vandalism
- FACTA's role
- Bendora Hut.

See Appendix 1 for my field notes with each of the stakeholders.

***8. Reflect***

Reflecting a third time enabled me to arrange my thoughts and resulting information from the interviews, into a more logical order. Ideas that I identified as important from these interviews were:

- signage
- catchphrase
- walks (including self guided and heritage week)
- constraints (eg vandalism)

- brochures
- public awareness campaigns.

***9. Action*: Revise plan with stakeholder comments**

Date: January 2004

Using the reflection time and the comments from my field notes, I could integrate and cull ideas. This was the critical writing time.

***10. Action and Discussion*: submit a draft to stakeholders and appropriate FACTA members**

Date: January 2004

A brief discussion with the original FACTA member kept me on track and we were able to discuss the progression of the document. It was decided to send out the document to ACT Parks and Conservation, ACT Forests, the historian and another FACTA member by email in late February 2004. One of the main issues with this stage was the actual size of the document. The document included photographs and diagrams which made the document rather large to email. Several attempts were made through compressing or sending the document over 2 emails. Eventually I deleted all the photographs from the draft and it could be sent.

The issues that were identified were not of major importance. An unexpected issue arose, as I had expected further ideas and many comments. However, there were three main comments. These were about the:

- amount of words on the sign about arboreta in the ACT (ACT Parks and Conservation)
- correct term of Forestry and Timber Bureau and Forestry School at Yarralumla (Historian)
- inclusion of the developed postcards and display (FACTA members)

Although these seem relatively minor changes, they were scientifically (especially the naming) important. Any misleading comments could have an impact on future work, including signs.

*11. Reflection*

The plan was now in its final stages and this reflection time helped me to understand what needed to be done to finalise the plan.

*12. Action*

The identified issues were corrected. No new content was included.

*13. Discussion*: **Present plan to FACTA**

Date: April 2004

The Interpretation plan was discussed at the FACTA meeting 29 April, 2004. It was decided that one of the FACTA members, an editor, would edit it. I could then implement these changes and then the document could be released. (Minutes 29 April 2004). My thoughts were that it was well received, and that it would be used in the management plan of Bendora Arboretum, which was being done in conjunction with the ACT Heritage grant. Some photographs were then reinserted into the plan.

*14. Action*: **Receive final comments before releasing plan**

Date: May 2004

The final comments were received in May 2004 and these were edited into the plan.

*15. Action*: **Release plan**

Date: June 2004

The document was printed and released. The document was sent to the 'stakeholders' identified in the plan. Various members of FACTA preferred that the document be taken and discussed with the stakeholders again with the view that the document be further updated. Others held the view that the document was complete, and any new information would be part of the dynamic aspect of the document. At this point, it was a good opportunity for personal reflection to seek a way to implement the outcomes of the plan.

At this time I gave the plan to a FACTA member who saw it printed and sent to the stakeholders.

The final Bendora Interpretation Plan is presented in Chapter 5.

***16. Discussion*: Discuss plan with main stakeholder**

Date: August 2004

The plan was discussed with the main stakeholder-ACT Parks and Conservation. Positive comments were received. However, there were some additional edits that were identified.

This meeting discussed the dilemma of what to do with the information. The initial idea was to amend the document to reflect the minor edits picked up, and this was done over time. However, the actual substance of the document remained the same and the discussions to implement it were of a positive nature. The only restricting factor in the implementation of the plan was that ACT Roads had closed the access road to Bendora Arboretum to the general public, and getting access was going to be difficult until April 2005.

**17. Begin new cycle. Build on knowledge gained. Generate new products.**

The main artefact that was produced as a result of my involvement in FACTA was the interpretation strategy for Bendora Arboretum. As this arboretum was the remaining 'upland' arboretum after the devastating January 2003 bushfires in the ACT it was decided that it needed some on-site interpretation. The purpose of the plan was to give guidance to the land managers and help them with their interpretation of it, as they had felt they did not have the time to do this. The document produced was to form a guide and had many suggestions. It was for both ACT Parks and FACTA. It is different from a communication plan, which is about the process and how to achieve the process. Several other products were produced as a result of the interpretation plan:

- display
- postcards
- future involvement with ACT Parks and Conservation project and the International Arboretum development.

*New products*

**Display**

The development of a display (Figure 6) for the World Forestry Day dinner, hosted by the ACT branch, Institute of Foresters was identified and developed as a result of the interpretation plan. This display was also featured at the launch of the International arboretum design launch in October 2004.

Although the final interpretation strategy was not finished, in February 2004 I was requested to organise a display on ACT Arboreta for the ACT Institute of Foresters World Forestry Day dinner. I used a very similar process to develop this material. I reflected, acted and discussed with various members of FACTA to discover their needs and what they would like on it. I designed a display and drafted words and several FACTA members were invited to provide comments and help in the final writing. As a result, three 'panels' were made all printed on vinyl- for ease of transport and to be weatherproof. They could also be split up, one with the information and two with photographs- some from the early days of the establishment of the ACT Arboreta and some from more recent days. This display was generic, versatile and designed with many public events in mind. Since then, it has been used at the launch of the international arboretum design competition and it has been used at various FACTA functions.


*Figure 6: Arboreta of the ACT display as presented at the April World Forestry Day 2004 dinner, hosted by The Institute of Foresters of Australia*

**Postcards**

In April 2003, I took some photographs that were approved by the FACTA committee and by 2004, it was decided that postcards should be made up (Figure 7 and FACTA meetings 27 November 2003 and 29 May 2004, Appendix 3). Initially these were an experiment however, they sold quickly (Minutes 29 May 2004, Appendix 3).

Therefore it was felt that using the money made, and increasing the quality and number of the postcards, they could be sold at the Old Parliament House shop- the outlet for the National Heritage Trust and supporter of ACT Arboreta. Time to distribute and promote this second run has been limited.


*Figure 7: The six FACTA postcards, produced through FACTA*

**Other developments**

ACT Parks and Conservation embraced the Interpretation plan, when it was discussed in August 2004. They were keen to implement some of the interpretation ideas presented and begin work on the self-guided walk detailed in the plan. One of the constraints for this plan was that the access to the arboretum is being restricted by ACT Roads due to the possibility of unsafe trees falling across the road. This issue is hoped to be resolved by April 2005, and therefore ACT Parks and Conservation will be able to resume their promotion of Bendora Arboretum.

Other developments around Canberra and arboreta include the rejuvenation and re-establishment of Blundells Arboretum and Blue Range Arboretum. If these two arboreta are once again re-established, then the Bendora Interpretation Plan should provide a base for future interpretation developments in them. It is hoped that the Interpretation Plan will provide the guidance to help 'link' all the ACT arboreta.

There has also been the plan to establish an 'international arboretum' in the lowland areas of Canberra - a prominent area of ACT Forest that was burnt in the January 2003 bushfires. It is of close proximity to Canberra city and would be of considerable importance to the community- for landscape architects, foresters, botanists, gardeners, and the general public. The Interpretation Plan for Bendora Arboretum was made available to the ACT Chief Ministers Department for information.

### *Discussion of the process of PAR*

I have attempted to use a model of PAR to develop science communication material. The model involved considerable interaction with identified groups. A revised model could provide a method for other community groups to follow and to develop their science communication material.

The PAR method includes reflection time, discussion with interested parties, and research, then reflection again and further consultation with the interested parties so that the work is incorporated into other organizations. Resulting products should result in the 'ownership' of the work and enhance the community 'feel'. Not only will the resulting work showcase the community group, it should encourage communication between the interested parties, which results in the meshing of ideas and from that new ideas.

Yager (1991) described a method of learning- the Constructivist model. He suggested that "knowledge is not acquired passively". Constructivist learning is actively engaging the participant in their learning process and it is often used in informal science communication. During this process it was felt that there was considerable consultation with people, and discussions.

The end product resulted in a FACTA Communication plan as well as a Bendora Interpretation plan. Reasons are as follows:

- It was difficult (though attempts were made) to differentiate between FACTA Communication material and Bendora Arboretum communication material. Often, the FACTA communication material will influence

Bendora Arboretum material and vice-versa as it is all being established simultaneously. Perhaps a method for dealing with this would have been to have a FACTA Communication Plan before work on the arboretum began. However, as a result of the Bendora Interpretation Plan, a FACTA Communication Plan has been discussed and will be done once there are available resources. Although it is labelled as a Communication/ Interpretation plan for Bendora Arboretum and Hut, the document has mainly concentrated on the interpretive ideas for Bendora Arboretum.

- All participants' views were appreciated and, it is hoped, captured in the document. Thus, the document became more of a repository of good interpretation ideas for not only Bendora Arboretum, but others as well.
- The outcome has become a useful document for FACTA and ACT Parks and Conservation and ACT Forests. It is expected that the document will be revised completely once the FACTA Communication Plan is complete.

### *Issues surrounding the research methodology*

There are several issues that are possible hindrances or advantages of this research method. These include time, expectations, people relationships, geographic location, outside forces, personal judgement and maintaining the science.

**Time**

The biggest limitation of this research method is that it can take a long time and not all views will be expressed in the final product. The best way to deal with this was by having a tangible time limit. The work was part of an ACT Heritage Grant and the time to acquit those funds was by December 2004. Work was expected in by 30 June 2004.

**Expectations**

This issue includes others' and my expectations. Everyone has different expectations and this needs to be managed appropriately. In this instance, I was expected to develop a product that everyone could use. Through constant reflection and discussion with peers and stakeholders, their expectations could be managed. The toughest

expectation to manage though was my own. What I had expected to develop, at times seemed to differ from my initial thoughts. This is where the reflection time was important to highlight that the stakeholders would be using the resulting product.

**People personalities**

Participants are varied, in their organisations role and personalities. It is important to identify highly technical people, or people involved who are not interested, and involve them in an appropriate role of the research. This will influence the resulting product.

**Location**

This was determined by the research topic. In 2004, however, ACT Roads decided that the road that went past Bendora Arboretum was unsafe due to the fire-damaged trees along side. Special permission could be gained, but no public access was encouraged. This dissuaded frequent trips to enjoy Bendora Arboretum and discuss it with the stakeholders and other FACTA members.

**Outside forces**

The actual implementation of the interpretation plan was delayed somewhat as the ACT Roads authority deemed it necessary to close the Mt Franklin Road for most of 2004 till mid-2005. This delayed public access, though FACTA members were able to organise trips to Bendora Arboretum to measure it. The self-guided walk development has had to be delayed, though ACT Parks and Conservation are very keen to establish it.

**Personal judgement**

Everyone would like to have their views and opinions considered. Deciding what views and how to incorporate them into the work was important. Through constant reflection and discussions with stakeholders and peers, the information that is deemed important should remain included.

**Maintaining the science**

To maintain the science throughout the process of developing the communication material, can be hard. One method to manage this is through a clear outline of

identifying what is relevant as well as maintaining the communication channels through the community organisation.

### *Key findings*

There were several key findings from this case study. These can be related to the principles from Smith (1997, p.183) were achieved to various levels of success.

The key findings of this sub-thesis are that:

- PAR can be time consuming
- there needs to be a clear procedure
- flexibility should be maintained
- communication channels should be maintained
- expectations need to be managed
- reflection time should be maintained
- PAR is a form of constructivist learning.

**PAR can be time consuming**

The PAR process can be time consuming. The PAR method outlined in Chapter 3 requires a number of iterations and discussions to take place, as well as time for reflection. The number of iterations and discussions is dependant upon the topic and the participants. The reflection time is necessary in the PAR process, as it helps the researcher to decide what is required and what is needed to fill that requirement. The reflection time also has an impact on the overall timeline, as reflection is ongoing, and although indicated as a reflective 'time' it is an on-going process throughout the entire research. Reflection is often optimum when there is a generation of the new ideas by the researcher.

The whole PAR process in this instance needs to be to a 'loose' timescale, as it relies on other people, reflection time and action time.

**Need for a clear procedure**

At the beginning of the research, there is often a clear idea of what is required. At this point, notes should be made to identify and keep the researcher on track. Not only will

it help to keep meetings on track, but also the research. Even though PAR involves reflection and some digression, the overall basic research pathway should be followed. Setting out Terms of Reference is one such method to help keep the research focussed on the initial goal, while generating others.

Another part of procedure involves the meetings and communication between the researcher and the participants. Ideally at the beginning of meetings it is important to state the purpose of the research, expected outcomes of the meeting, and any actions that will be required to follow the meeting. It is also important in correspondence to identify the topic, the request in a concise manner and the timeline. Naturally contact details should be included in both the meetings and correspondence. Many participants are busy and need to determine if they can participate in a short time. In this research, the initial revision (Step 10) highlights the necessity for brevity, interest, purpose, contact details and timeline.

**Maintain flexibility**

As the researcher is a participant, she should be initiating meetings and discussions. It is important to ensure that all stakeholders' needs are meet, and to do this, it is important to meet them at their convenient time and chase your deadlines with them, but not to pressure them. The deadlines are often the researcher's and not the stakeholders', and mutual agreement to input time is important. It is important to meet stakeholders at a time convenient to them, but still be willing to include additional comments if they are submitted late.

**Maintain communication avenues**

This relates to the key finding of having a clear procedure. If participants know where the research process is up to, then researcher can progress results more efficiently. Maintaining communication avenues involves letting the key participants knowing what is going on, either through emails, phone calls or meetings on a regular basis.

**Manage expectations**

Both the researcher and the participants have expectations of what they believe will result from the research. One example is in step 10- when the draft was sent to the stakeholders and suitable members of FACTA. I expected many comments and

interaction, and in reality there was very little. As the Interpretation plan was at the forefront of my mind, I had slipped into the thought that it was at the forefront of everyone else's too. The actual number of comments brought me back to reality.

There is a need to have clear outcomes and procedures. Although this topic of research allowed digression of thoughts, many of the meetings could have veered from the initial purpose of the meeting. Some digression is necessary, however, the purpose and aim of the meetings/ correspondence should be stated first, so everyone can understand what is expected. This is also achieved through the first reflection scope of the research.

Also a clear procedure of where information feeds into the process is helpful. It not only guides the researcher, but also maintains the structure of the research.

**Maintain reflection time**

At the onset, reflection time was initially thought to be of no value. However, as the research progressed, the mind needed to mull over suggestions and information and how to best include it. The best way to approach this was to initially detail all the discussions resulting ideas. From there, time was needed to work out what could or should be included, any new ideas and how they could enhance the plan. Reflection allows the mind to sort through all the information and think from a different angle, and to work out how to incorporate ideas.

Also important was the involvement of outsiders- friends, family members that could be used as people that belonged to the 'general public.' It meant that discussions with these people could work out any issues and ensure that the approach could be tailored to the concept.

**PAR is a form of constructivist learning**

The action research cycle of reflection, action and discussion with the researcher being a participant is a highly effective method of learning. Through the principles of Constructivist learning, PAR involves encouragement of discussions, ideas, reflection, and challenging the researcher to seek alternate sources of information and self-analysis. PAR is an act of doing, which is a highly effective method of learning.

### *Refining the PAR process*

From the research done, I have revised my original methodology model by reducing the number iterations and hopefully, time (Figure 8).

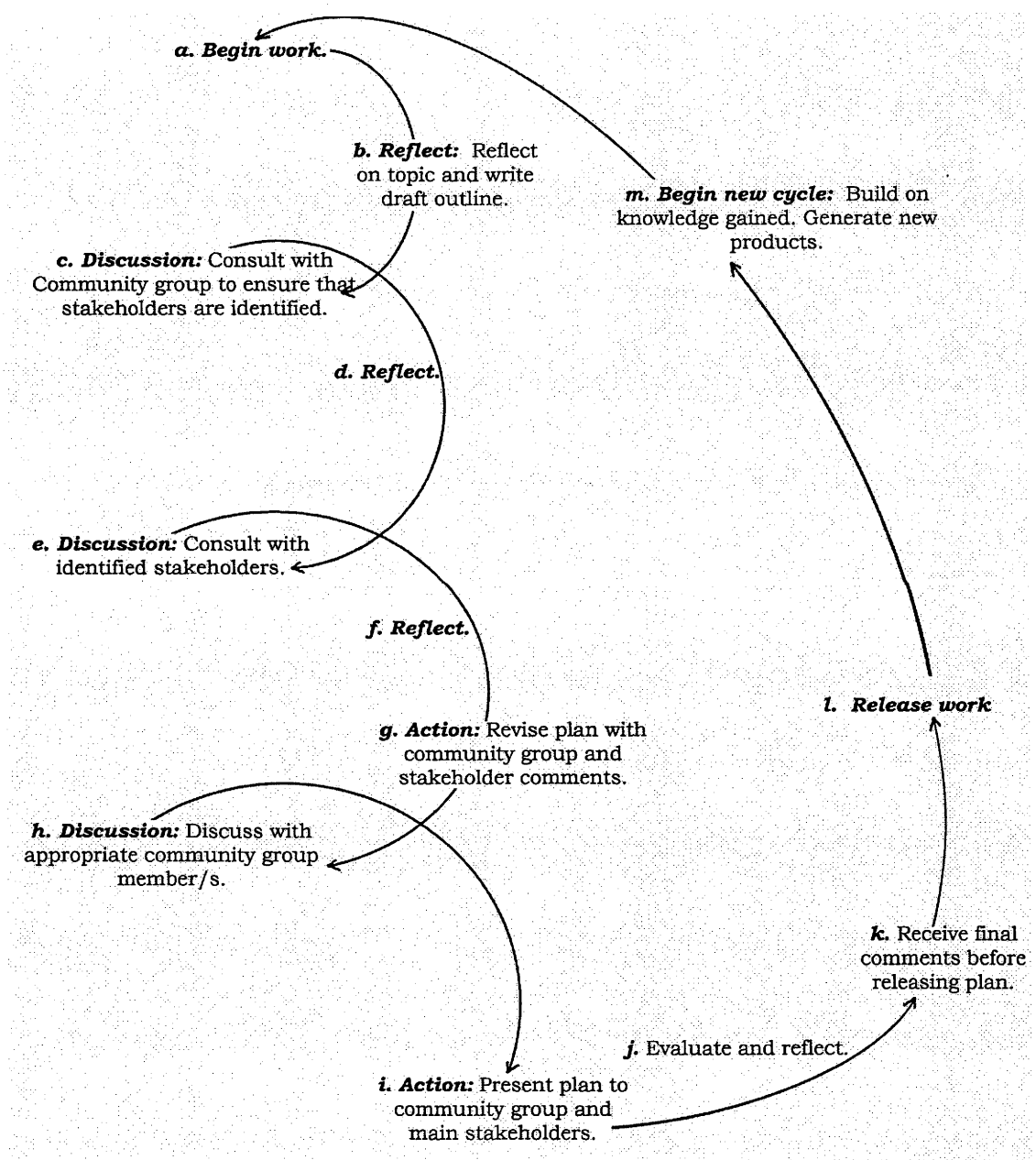


*Figure 8: Revised participatory action research model for community groups*

This revised model (Figure 8) places the initial discussion with FACTA as a draft, and joins the consulting time with the stakeholders in a shorter, more streamlined approach. There is some reflection in between to ensure that the process is thought through and a suitable direction is taken.

This has reduced the number of steps in the PAR model, from 15 to 13. Although this does not seem a major change, it has omitted a couple of stages, such as the reflection and action between the Consult with FACTA (Figure 5-stage 3) the Action (Figure 5-stage 6) and the Discussion (Figure 5-stage 7) into two stages of discussion (Figure 8-stages c and d) - one with the community group and the other with the stakeholders.

### *Conclusions*

PAR has proven to be useful in this instance as it is highly consultative. It requires a broad range of people to be approached, which ensures that a broad spectrum of ideas are gathered and discussed. This often resulted in the generation of new ideas and concepts.

PAR has helped me to understand the topic in a lot more detail. It also encouraged me to research the topic, consult with a wider range of people, and helped me to question ideas. It provided a means for discussion, which is a method of learning. How successful the actual Communication/Interpretation Plan for Bendora Arboretum and Hut is, will be determined by the development of the ideas and the visitation to the location.

PAR has proven to be a good technique to encourage and seek answers. It is also flexible enough to adapt to the complex nature of many topics.

Overall, the process proved to be satisfactory. The resulting model of PAR for developing science communication material for community groups should provide a base for ensuring that people's needs and opinions are integrated in a careful and productive manner. It meshes all ideas and maintains open communication avenues between the community group and the stakeholders to achieve the one goal. The plan

is the result of the dynamic process used, and it is hoped that the plan will continue to evolve and adapt.

In the next chapter, the outcome of the process – the Communication/ Interpretation Plan for Bendora Arboretum and Hut is presented.

# Chapter 5: The Communication/ Interpretation plan for Bendora Arboretum and Hut

The following is the Communication/Interpretation Plan for Bendora Arboretum and Hut. All of the references within the document have been generalised or removed as too the font style changed, in an effort to reduce confusion between this document and the sub-thesis.

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## Interpretation/Communication Plan for Bendora Arboretum and Hut

### Summary

Bendora Arboretum and Hut were established in the 1940s and have become part of our Australian heritage. After the January 2003 bushfires, it became even more important to promote and enhance Bendora arboretum as it became the only surviving 'upland' or higher altitude arboretum in the Canberra region, which was part of the original 'series' of arboreta. Bendora Hut is one of the few huts in the Brindabella Ranges remaining intact.

Although public awareness of the arboreta is low, Bendora Arboretum has provided opportunities for foresters, students and interested people, to study many world famous trees, in the one location. The arboretum needs to expand its presence-informing people about their forestry heritage and continuing as a place to study trees as well as become a new recreational resource for everyone's enjoyment. This interpretation report attempts to identify and accommodate these future needs.

Recommendations include improved signage, careful plot labelling, promotional ideas for Heritage Week, a self guided tour and a display. The signage at Bendora Arboretum and Hut will strongly influence the interpretation at the other arboreta signage in the 'series'. A staged plan is proposed to make it achievable.

As this interpretation plan includes signage to be at Bendora Arboretum and Hut, there has been a need to look at the whole Canberra series of arboreta, with this plan being the first step

in linking the series together. A catch phrase of '*Arboreta.... living experiments'* and coordinated colours and layout has been strongly recommended. This plan contains details about the stakeholders, interest groups and target audience, progressing to the various methods of interpretation that could be used at the arboretum and hut. Also included are ways to disseminate this information through the use of the media, affiliations and networks. This plan is for guidance, to help the Friends of ACT Arboreta (FACTA) and other stakeholders work towards a common goal.

FACTA have a keen interest in the arboreta of the ACT and would like to encourage many people to enjoy and use the areas, hence the development of this interpretation plan. The terms of reference for this document were decided upon by the program manager of the ACT Heritage Unit Grant and these are attached. This document can also be viewed as a 'working document' to what is known about the arboreta, whilst focusing on Bendora Arboretum and Hut. This document was developed to encourage thoughts and ideas and to provide guidance for various interpretation methods. It has concentrated specifically on the overall concepts and only touched on the detail of the material to be developed. Hopefully some of these ideas will be developed further, and will also inspire new ideas and concepts. Management and operational issues are outside of the scope of this document.

One of the key recommendations arisen from this plan, is the need for FACTA to develop a communication strategy to ensure consistent messages about arboreta are promoted.

This document has formed an important base of a post-graduate study, once again identifying that arboreta are used for many purposes!

**Acknowledgements**

I would also like to thank the following people for making the time to speak to me about Bendora Arboretum and Hut -Brett McNamara (Environment ACT), Dave Jamieson (ACT Forests), Matthew Higgins, Mark Mickelborough (ACT Parks and Conservation), Cris Brack and the late John Banks (ANU School of Resources, Environment and Society), Debbie Argue, Sam McKay and Jennifer Dunn (ACT Heritage Unit).

I would like to thank Friends of ACT Arboreta, especially Tony Fearnside and Kim Wells for their support during the writing of this report.

## Overview

Bendora Arboretum is located in Namadgi National Park, Brindabella Ranges west of Canberra. The SE corner of the arboretum is at Australian Mapping Grid reference 631 782, latitude 35°25'S, longitude 148°48'E with elevation 1,265 metres.

Access is approximately 10 km south of the Brindabella & Mt Franklin Rd junction (Piccadilly Circus). Pass through the locked gate on the Chalet Rd and travel for 1.3 km in a general SE direction from the Mt Franklin Rd and Bendora Hut will be visible. The arboretum is down the hill, adjacent to the hut.

Bendora Arboretum was established between 1940 and 1969, specifically for scientific purposes – to investigate silviculture and management of plantation forests in Australia. The arboretum was established as one of a series of arboreta across the ACT, incorporating the 'lowlands and uplands' of the territory. The hut at Bendora Arboretum was originally built as a shelter in the 1940s, for those people working at the arboreta. After the January 2003 bushfires, Bendora Arboretum became the only upland arboretum left intact.

Bendora Arboretum was measured for over 40 years by the Forestry and Timber Bureau and CSIRO Forestry and Forest Products, and contributed valuable information about conifers growing in higher altitudes in Australia. Even though measurement of the arboretum was last done in 1974, the arboretum is important as an educational, recreational and scientific resource as well as being part of ACT heritage. Friends of ACT Arboreta intend to measure the trees in the winter of 2004.

## Stakeholders

### *Stakeholder hierarchy*

Stakeholders and interest groups were identified through discussions with organisations and individuals. As the process developed, the stakeholder groups became apparent, forming an informal hierarchy of main and minor Stakeholders. It must be highlighted that this hierarchy is

specific only for Bendora Arboretum. Other arboreta in the ACT will have different main and minor stakeholders.

**Main stakeholders:**

***ACT Parks & Conservation:*** Bendora Arboretum and Hut are located in Namadgi National Park and are under their management.

***FACTA (Friends of ACT Arboreta):*** a collective community group, recognising the arboreta in the ACT as an important scientific and heritage resource.

***ACT Forests***: managed Bendora Arboretum and Hut for a time. Also it is important to associate this arboretum with other arboreta that may be re-established on ACT Forests land. This arboretum continues to provide valuable forestry information.

It is important that the main stakeholders are involved in all the information dissemination, correspondence and meetings regarding Bendora Arboretum.

**Minor stakeholders:**

***Environment ACT Heritage Unit***: involved with the conservation of Bendora Arboretum and Hut through promotion and some funding.

***ANU Forestry/ University Education***: The arboretum is used for teaching purposes.

***CSIRO Forestry & Forest Products***: Repository for the measurement records for many of the arboreta in the ACT, including Bendora Arboretum.

***Communication methods to stakeholders***

A basic matrix was developed to grasp the methods that the stakeholder groups can be informed about any arboretum and associated hut issues (see attachments). Whereby, the most effective way to update and inform the stakeholder groups was through emails, meetings (open and individual) and newsletters. There was less emphasis on letters, faxes, web pages and the telephone.

## Target audience

The identification of the target audience was done in consultation with the main stakeholders. This will provide guidance for communication material and will help in developing this material for maximum impact.

The main stakeholders have included in their target audience:

- scientists
- botanically interested people
- students of all ages
- people passing through the area (general public and tourists).

People's prior knowledge of the area and the environment will be extremely varied, therefore, it is important to start the level of information from their basic knowledge.

The establishment of a list of potentially interested groups will also help to target information about the arboretum.

## Interest groups

Interest groups were identified aside from the main stakeholders. The identification of interest groups provides a direct focus for information to be developed.

***Potentially interested groups***

Potentially interested groups include:

**Education**

- ACT Outdoor Education Teachers Association
- university and TAFE Lecturers
- school Groups (range of ages)
- teachers

**Organisations**

- Australian Forest Growers
- National Association of Forest Industries
- Canberra Softwood Association
- CSIRO Forestry and Forest Products
- Greening Australia
- Australian Garden Historical Society
- Institute of Foresters of Australia
- Institute of Landscape Architects
- Kosciusko Huts Association/ Huts of the High country
- National Trust of Australia
- Southern Tablelands Farm Forestry Network
- timber organisations

**Horticultural interests**

- Australian National Botanic Gardens
- gardeners
- landscape architects
- nurseries and Garden Societies

**Outdoor pursuits**

- bird Watching Clubs
- bushwalking clubs
- Orienteering ACT
- Outward Bound Australia
- plant and wildlife photographers
- scouts / Guides

**Other**

- families
- general Public
- landholders
- retirees
- tourists

Due to a widely varied amount of potentially interested groups there will also be highly varied background knowledge of the interest groups.

Generally any science writing should be aimed to be understood by a 12 year old. Information should build upon their knowledge and gradually introduce more information.

It is aimed that the interpretation of the area would show the heritage and the scientific value of such an area and its relation to modern day living. Some topics of interest include:

- what an arboretum is and its importance
- general information about Bendora Hut
- general information about Bendora Arboretum
- the area in relation to forestry and heritage
- a map showing locations of arboreta in the ACT
- map and information about climate and other similar zones
- information about distances and facilities
- animals in the area
- brochure that can be taken by the visitor.

All of these identified topics are addressed throughout this document, mostly in the form of a display.

***Communication channels with interested parties***

It is important to be able to effectively reach the interested parties, to inform them what is happening at the Arboretum and Hut. A basic matrix was made to identify the most appropriate

communication methods to reach them (attached). It should be noted that the interest groups were grouped into categories and these were used in the matrix.

All indications suggest that the best way to inform and relate to the interested parties should be orientated around:

- brochures
- website
- newsletters
- media avenues
- open meetings and field trips.

***Recommendation 1: A FACTA Communication Strategy that encompasses FACTA's involvement in arboreta and the key messages that it wishes to communicate to the interested groups and stakeholders. It should also identify the key issues and key communication material to be developed and distributed.***

## Key communication issues for Bendora Arboretum and Hut

Key communication issues are divided into the following areas:

- Aboriginal Heritage
- European Heritage
- Conservation

The identification of the key communication issues was obtained through extensive reading and numerous conversations (see Sources section), but it is recognised that possibly not all issues have been identified. The continuation of the search for key communication issues is recommended especially when developing related communication material.

### *Aboriginal heritage*

In communication with the ACT Heritage Trust, the January 2003 fires, has seen an increase in findings of aboriginal artefacts in the Brindabella Ranges. The author is not aware of any specific information on the aboriginal usage around Bendora Arboretum and Hut. (ACT Heritage, personal comment)

### *European heritage*

Bendora Arboretum and Hut are important as they have survived the devastating January 2003 bushfires where many huts and arboreta did not. As the Hut and Arboretum are an important part of our Australian heritage, it would be desirable to showcase this value through the preservation and profile of the heritage values of the area.

Important messages for the heritage aspect of Bendora Arboretum and Hut should include:

- history of the area
  - general information about the aboriginal occupation in the Canberra region and information on the aboriginal use of this area.
  - history of forestry in the area its influence on Canberra eg timber was for used in Canberra's building industry *
  - Chalet Rd: this section of road was part of the access to Mt Franklin, however, as the snow drifts were deep along this part, the road was eventually moved to the other side of Bendora Hill.
  - history of Bendora Hut: In relation to Bendora Arboretum, its alternative uses, such as being used for wildlife surveys
- the importance of forestry in the Brindabella Ranges
- importance of Arboreta and reason why Bendora arboretum was established there
- relation of the Brindabella Ranges to the development of Canberra eg recreation, access etc.

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* **Brindabella Heritage**, 1994, eds Fraser,I. and McJannet, M. Canberra & South-East Region Environment Centre, Canberra p8

***Conservation***

There are a number of conservation issues concerning Bendora Hut and Arboretum. They include:

- conservation of the arboretum for scientific and study purposes
- conservation of some species and provenances, as some are rare or endangered in their original habitat.
- conservation of Bendora arboretum as a 'series of ACT arboreta'.
- conservation of the hut
- the impact of the arboretum on the surrounding environment- eg spread of pine wildlings
- the conservation of the surrounding environment:
  - vegetation
  - climate
  - fauna and
  - the management of the area

These points should be emphasised throughout the interpretation information.

***Recommendation 2: Continuation of research into the key communication issues for-aboriginal, cultural/European and conservation for Bendora Arboretum and Hut.***

## Interpretation methods for Bendora Arboretum and Hut

People visiting Mt Franklin and the Chalet ruins, Mt Ginini, Pryors Hut, Bulls Head and Bendora Dam. In most cases, visitors need to pass by the Chalet Rd and prominent signage and could be encouraged to visit Bendora Arboretum and Hut through more prominent signage.

Suggested interpretation items are listed below.

1. Branding
2. Sign about 'Arboreta and the ACT'

3. Major signage at Bendora Arboretum and Hut
4. Self-guided Walk
5. Brochures
6. Maps
7. Ranger Guided Walk
8. Signage detailing species
9. Website
10. School activities
11. Displays
12. FACTA talks
13. Expansion of Ideas including other signs (vegetation, forestry history, animals, equipment).

***Branding***

Since Bendora arboretum is part of a 'series' of arboreta in the ACT and it is important to reflect this in the style of information that is produced. This can be achieved through the use of a catch phrase, and consistent layout and style of the signage.

A catch phrase that has been suggested is '***Arboreta.....living experiments'***. This catch phrase can be placed on the bottom of all the major signs, brochures, maps, displays and other information relating to the arboreta.

As all the arboreta are different, it is important to identify them as such. However, using similar styles and colours for the signage will also link the 'series'. Signage at Bendora Arboretum and Hut will be largely determined by ACT Parks and Conservation guidelines. Other ACT arboreta signage will be largely determined by their landholders, however, an overall 'feel' and layout should be similar and include the catch phrase.

It is important that the signage state a point of contact. FACTA information sheet already do this.

***Recommendation 3: Consistent and prominent usage of a catch phrase.***

***Sign about 'Arboreta and the ACT'***

This sign would be common to Bendora Arboretum and all the other arboreta in the ACT, identifying the arboreta as part of a series. Each sign might state:

- What an arboretum is
- When arboreta were established in the ACT and what they were used for
- Who to contact for more information
- Map of the ACT showing location of all existing or proposed arboreta. If feasible it would be useful to show all the arboreta including those now non-existent.
- Photograph of an arboretum tree being measured.
- Catch phrase '*Arboreta.....living experiments'.*

A draft of an example sign is attached.

A concise map of the ACT with current and prospective (assuming they will be replanted) arboreta marked on it. Depending on the map, it may be useful to identify where all the original arboreta were placed. The identification of these different categories should be colour coded eg grey for non-existent arboreta.

***Major signage at Bendora Arboretum and Hut***

There is a need for several signs at Bendora Arboretum and Hut.

1. A sign indicating Bendora Arboretum and Hut, at the Mt Franklin/ Chalet Rd turn off.
2. One small sign indicating the direction of the arboretum
3. One interpretive sign at Bendora Hut.
4. One interpretive sign at Bendora Arboretum.
5. Possibly several interpretive signs along the Chalet Road to Bendora Arboretum and Hut.

The two small signs indicating direction of the hut and arboretum could be routed signs, in the style of the other Namadgi National Park signage.

Bendora Hut Sign

There is already a sign on the door of Bendora Hut, containing a small amount of information. A new sign with more information about the history of the hut should replace the current sign, and be placed in a new location (eg beside the hut).

Photographs can be sourced from the files held at CSIRO, various members of FACTA and from Matthew Higgins author of 'Skis on the Brindabellas'. Information about what the hut has been used for, such as its primary role as the mess hut for the men working in the arboretum, the shelter it gave to those travelling past to Mt Franklin Chalet in winter, and later as a base for an ANU PhD student to study bats.

One or two large posters of old and new photographs could be developed for inside the hut. These could include cars bogged in snow on the way to Mt Franklin, the arboretum being planted, an early photograph of the hut etc. Developing these into posters, rather than a sign, will allow for multiple copies to be made and they can be used in displays or as replacements.

Bendora Arboretum Sign- 'Introducing Bendora Arboretum'

As this sign will be one of the first arboreta signs to be made, it will impact on the signage at the other arboreta in the ACT. This sign should contain the following:

- history of Bendora Arboretum- who, when and why it was established
- any major events in the life of the arboretum - eg expansion, replanting of areas, trials that didn't work, fire and the removal of weedy species.
- current use eg education, study, relaxation, interest etc.
- catch phrase of '***Arboreta...living experiments***'.
- where to get more information
- a couple of photographs, including one of a person measuring a tree.

A draft sign for Bendora Arboretum has been attached.

Interpretive Signs along the Road to Bendora Hut and Arboretum

Some interpretive signage could be developed for along the Chalet Rd to Bendora Hut and Arboretum. This would build upon the 'journey' of walking through the national park to the arboretum and hut. Interpretation signs that could be developed include:

- forest type in the area.
- early forestry in the area. The history of logging in the Brindabella Ranges. A good place for this sign is near Bendora Hut, as there is some old cable that was used by logging trucks still in two trees
- labour in the bush. People that lived and worked in the area. (see Higgins, 1995, *Bulls Head and the Arboreta*)
- fauna in the area. Tracks of birds, kangaroos, reptiles and their habitats
- road access to Mt Franklin
- fire in the area- tree response to fire, regeneration of the area, how animals may have survived.

***Recommendation 4: Prominent signage to Bendora Arboretum and Hut be developed.***

***Recommendation 5: Early photographs of Bendora Arboretum and Hut should be gathered for use in communication material.***

***Self-guided walk***

A self-guided walk would be a great resource to Bendora Arboretum. It is also one of the most cost–effective means of interpretation, and allows the person to journey at their own pace. A self-guided walk would need to integrate a range of interesting aspects of the arboretum. Initially the walk would be guided by a numbered brochure, with corresponding numbered marker posts, with directional markers. This would make it possible for the walk to be established quickly. Over time and with additional resources, the self-guided walk would be upgraded to have its own signage on the trail in addition to the accompanying brochure.

The following strategy is proposed for establishing the self-guided walk.

1. Plan the route with knowledgeable people. It should take in a range of interesting tree species and consider the natural topography of the area. A possible route for a 15- 30 minute walk is suggested in the Attachments together with some topics which might be conveyed at each numbered stop. On the back of the brochure would be the Arboretum map with the species and the walk.
2. Construct the walk. This can be done with the help of FACTA and Conservation Australia volunteers. It is anticipated that the trail would use as many of the natural materials found in the arboretum. It would need to be cheap to construct but would need to be done under the Environment ACT guidelines. Numbered posts would need to be made, perhaps from treated timber from the other burnt arboreta.
3. Design and produce the brochure. This would be a black and white brochure, for ease of photocopying. This brochure would be kept in Bendora Hut in a Brochure box. FACTA members will be called upon to assist in the production or contracted to produce the brochure.

***Recommendation 6: Implement self-guided walk and supporting information.***

***Brochures***

Any information about Bendora Arboretum and Hut should include the National Park ban on cats and dogs.

Current

There is an existing brochure written by Kim Wells, Tony Fearnside and Ken Eldridge entitled 'Bendora Arboretum (Arboretum no 5)' written for the Australian Forestry School reunion in 2000 and revised in 2003. It contains many species names that people with a forestry background find very informative. Some adaptation of the information in the brochure would make it even more relevant to the general public. A paper by Alan Brown submitted to 'Heritage in Trust' provided additional information which may also be included on this brochure.

Self-guided tour brochure

A brochure would be required for the 'self-guided tour'. See the previous section and Attachments for more information.

FACTA sheet

FACTA produces information sheets about arboreta in the ACT. One on Bendora Arboretum could cover basic information about the access, history, facilities, altitude, general species, and where to get more information. The information from these FACTA sheets can also be easily transferred to any web site, brochure or display. While details need to be checked a draft FACTA sheet has been attached.

Colour brochure

It would be ideal to have one colour brochure that encompasses much of the information of the area – the history, the self-guided walk, some interesting species and a full colour map. This would take some time to plan and consider. The best size to accommodate this information is an A3 sheet that folds in half and then folds to a DL size (110x220mm). It is suggested that such a brochure is produced when is gauged there is sufficient interest.

Booklet

A booklet about Bendora Arboretum and Hut could also be explored and perhaps be created as a chapter in a bigger publication telling the story of all the arboreta in the ACT and species planted. However, such work is ambitious and would involve several people for a number of months.

***Maps***

Currently there are two laminated A3 maps of the arboretum, kept at Bendora Hut. Having a map on the self - guided brochure, will be even more convenient.

> ***Recommendation 7: Revise all printed material to further promote interest in the arboretum. The style should be consistent throughout arboreta brochures and maps.***

### *Guided walk*

A guided walk can consist of a ranger guided walk or a guided walk from an experienced arboreta person. Either method will encourage people to visit the Arboretum and Hut. Usually the guide will be required to speak to a wide audience with a range of botanical knowledge.

Ranger guided tours, as operated by Environment ACT could be advertised as follows:

| Date | Time | Place | Theme |
|---|---|---|---|
| Saturday X April | 10.30am | Bendora Arboretum in Namadgi National Park | **Bendora Arboretum** Delve into Namadgi National Park history and discover why this spectacular arboretum was planted and how it is used. Meet at Bulls Head (5 kms from Piccadilly Circus,, Mt Franklin Rd). |

To expand the knowledge of people who can guide at the arboretum, it is recommended that a 'training' day be held. This day would revolve around the sharing of information and activities that could be done in the Arboretum and Hut.

***Recommendation 8: FACTA to provide some basic information training to rangers and potential guides. It should include information that is important or specific to Bendora Arboretum and Hut.***

### *Signage detailing species*

Current plot labels and replacement of missing labels

Currently some plot labels are on aluminium tags, fixed to wooden posts are located on the south east corners of each plot. This was the standard method for labelling a plot and it is recommended that these original tags be maintained and replaced if lost. This will help to maintain the feel of heritage and allow for additional tree identification.

More detailed plot labelling

Many people like to know more information about a species, than just its name. It is easier to do this with a sign in front of the plot, if it is beside a path.

A good example of species signage was at Blundells Arboretum. These signs were 'Scotchcal' with metal backing and were relatively vandal-proof. After the January 2003 bushfires swept through Blundells arboretum, some of these signs remained intact though the plastic on top was melted. The signs on the tree plots contained the following information, as shown in the Figure below.

- Plot number
- Latin name
- Common name
- Family
- Year of Planting
- Natural Range
- Map of the world showing origin of that species
- A few brief sentences detailing some interesting facts about the species.


***Figure: Plot sign from Blundells Arboretum (post 2003 fires)***

(author photograph)

Other examples of signage are at the Lindsay Pryor walk at ANU, and at Westbourne Woods in Yarralumla.

It would also be of interest to include a small drawing of the tree showing the form and height, with a person standing alongside (see Figure† below).

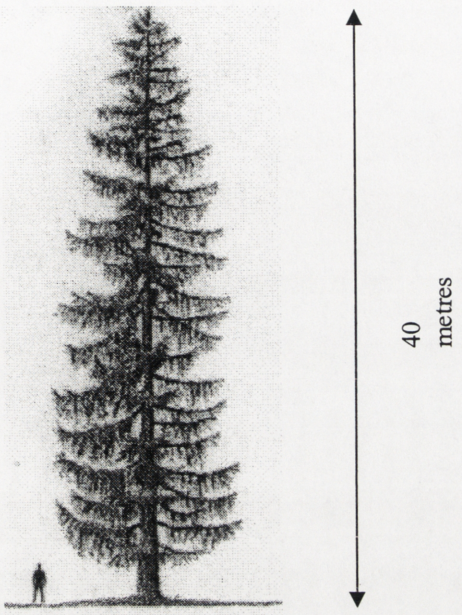


***Figure: Example of tree form and height***

Signs could be made from burnt arboreta timber and an A6 size (105x148mm) etched metal rectangle on top of the post and overlaid with vandalism - proof plastic.

Although these signs may be more costly they are an important part of the long term interpretation plan.

***Recommendation 9: Retagging and introduction of additional labels of the tree plots.***

† adapted from Coombes, A **World Trees**, 1992, Harper Collins Publishers, Singapore.

### *Website*

A website about Bendora Arboretum would be a part of the 'Arboreta of the ACT' website, detailed in the Media Avenues Chapter.

### *School activities*

School visits

ACT Parks and Conservation and ACT Forest Rangers visit schools and speak to students about the environment. Information about arboreta could be included through activities or discussions about plants, use of areas, heritage and shelter (hut), and impact on the world (eg plantations) etc.

School holiday programs

There is also an opportunity to link into activities held in many school holiday programs, such as the Australian National Botanic Garden School Holiday program. These can provide a unique opportunity to educate and raise the awareness of arboreta to students. Hands-on experience could be introduced through a workshop, introducing children to the theme of the science in forestry- measuring trees, planting trees, looking at tree responses to fire etc. A field excursion could also be included.

Teachers kit

Teachers are always looking for new ideas to present to their classes. To build on this, a 'package' of information could be made available to them, including,

- Information about Namadgi National Park
- A point of contact for them
- Description about the vegetation and fauna in the area
- Brief description about the heritage in the area
- What can be done at various stops

- Incorporate Bendora arboretum and the self guided walk
- Look at the remains of the Mt Franklin Chalet.

This could include all the information that would be necessary for a teacher to conduct an excursion to the arboretum. Also a contact point if the teacher would wish a FACTA guide or an ACT Parks Ranger to accompany their excursion. General ACT Parks and Conservation information should be included in the information kit to the teachers.

***Displays***

It is recommended that a general display be designed to depict arboreta in the ACT and their use.

Such a display would be targeted to the general public and could be used at various functions, such as seminars, forestry and heritage events and any other occasions.

The display itself should contain limited information and if possible a map would be part of this display. It may also be useful to have two separate posters- one showing historical photographs of arboreta in the ACT and the other showing current photographs, including the burnt and re-sprouting trees. An overview of the display 'Arboreta in the ACT' prepared for FACTA has been attached. This display is on vinyl for easy transport and hard waring. It can be used in and out of doors.

Also recommended is the collation and inclusion of transportable, items and material which can be used in conjunction with the display. Items such as:

- Several types of cones, eg. from *Pinus coulteri, Larix decidua, Pinus wallichiana* and *Picea pungens*
- Several tree seedlings represented in the arboretum
- Some old forestry measuring equipment
- Possibly an old chainsaw or handsaw
- Information sheets about Arboreta, Bendora Arboretum and some FACTA newsletters.

***Recommendation 10: Use of the transportable display 'Arboreta in the ACT' and the gathering of any arboreta artefacts.***

### *FACTA talks*

FACTA have previously hosted a talk about Blundells arboretum and it would be ideal to build on this and host more talks. They could be general or specific depending on the context and would be for any people that are interested in what an arboretum is, but not able to join in a walk. Introducing new ideas into the FACTA walks will increase enthusiasm and will encourage participation. The following are two talk templates.

*'Pre-arboretum walk' talk*

This introductory talk could be held one weekday evening at a venue in Canberra such as the CSIRO Forestry and Forest Products Lecture Theatre. If could include:

- An MC hosting the evening and discussing what to expect when you visit an arboretum
- A viewing of the ABC 'snapshot' segment on arboreta compiled by Matthew Higgins
- The main speaker interviewing one of the foresters about the arboretum- eg discuss the history. This could be developed into a 'scene setting exercise' where speakers could wear clothes from the 1940s and be interviewed- giving the atmosphere of stepping back in time. This would be a great draw card for the media.
- The display, should be included, especially with some old forestry artefacts- old chainsaw, old cross cut saw, old axe and copies of old photographs, recent photographs, unusual pine cones. The media are very interested in displays and photographic/ video opportunities.
- Any communication material developed by FACTA (postcards, newsletters etc) and a joining list.

*Building upon the walks*

During a walk, the experienced presenter might relay stories and facts about the following:

- douglas fir, *Pseudotsuga menzies*
- the hybrid of *Pinus attenuata x radiata*
- lawson's cypress, *Chamaecyparis lawsoniana*

- radiata pine, *Pinus radiata*
- coulter pine, *Pinus coulteri*
- the white pines, *Pinus strobus* (eastern) and *Pinus monticola* (western)
- Commonwealth management and its influence on arboretum plantings

The stories could relate to the origin of the tree, how some tree species came to be planted in the ACT.

Currently a lot of these 'stories' are told by the presenter and are only known through memory. Ultimately it would be ideal to have these stories transcribed into the booklet or into a document that could be used as a resource for future presenters.

Walks in the arboreta during Heritage Week are well attended, and if the presenter feels comfortable, then he or she may wish to also include some additional ideas:

- having some displays there, such as some forestry equipment (these would have to be easily transportable for the person coordinating the walks).
- treasure hunt for kids
- learning how to measure the forest- people could learn how to use a relascope, use a diameter tape, use a basal area wedge and the chance to interpret what they measured.
- learn to use a clinometer and a compass
- maybe learn how to use a map/ or make a map. This could be turned into a treasure hunt for kids eg, smallest cone, tallest tree in a plot, number of trees in a plot, etc.
- having the guide/s in period costume (~1940).

***Postcards and posters***

Currently FACTA are exploring the use of photographs for postcards and posters. It is strongly recommended that Bendora Arboretum and Hut are featured in these items. Individual trees can also be profiled. Possibly in the future a calendar could be produced with photographs of various aspects of the arboreta in the ACT.

***Surveys and feedback forms***

It would be ideal to get an indication of how many people currently visit Bendora Arboretum and Bendora Hut and other areas in the Brindabella Ranges. This could be done by a ranger survey or a device that could measure how many people walk by. It would provide a measure for the stakeholders to indicate interest in the area.

Also surveys and feedback forms could be initially put at Bendora Hut or on the website, asking people what they liked, what they didn't and what they would like to see included.

***Recommendation 11: Develop more communication material that can be used to promote arboreta in the ACT (eg postcards, written articles, regular seminars etc).***

## Staging the interpretation plan

Staging the interpretation plan for Bendora Arboretum and Hut will break it into more manageable segments.

**Stage 1 – Completed by Heritage Week 2004 (April)‡**

1. Display for World Forestry Day
2. Development of postcards

**Stage 2- To be completed by November 2004**

1. Signs indicating the direction of Bendora Arboretum and Hut
2. Bendora Arboretum interpretive sign
3. Self-guided tour with associated signage and black and white brochure.
4. Launch of self-guided tour
5. A walk with National Trust members in October 2004.
6. Bendora Hut interpretive sign
7. Collation of information and decision on words for individual plot signage
8. 'Pre-arboretum walk' talk and field trip to Bendora Arboretum and Hut run by FACTA
9. Replacement of missing original plot tags.

‡ This stage originally incorporated part of the November stage, however, due to the Mt Franklin Road closure, it was deemed necessary to move some of the original interpretation items to a new completion date in November.

**Stage 3- To be completed by April 2005**

1. Individual plot labelling in place
2. 'Pre-arboretum walk' talk, inviting media
3. The general interpretive sign about Arboreta
4. Full incorporation into recognised events around Canberra, eg Heritage Week, World Forestry Day etc.
5. Article in paper pre heritage walk
6. Article in 'Heritage in Trust'
7. Development of a full colour brochure

**Stage 4- Continuation**

1. Articles into recognised network publications
2. Publication of the full colour brochure
3. Upgrading of the self-guided walk to have interpretive signs
4. Development of signage along the Chalet Rd interpreting vegetation and history
5. Development of website
6. Development of teachers' kit

## Media avenues

Possible media avenues for the arboretum are:

1. Television
2. Radio
3. Newspaper articles and notices
4. News story
5. Magazine article
6. Website

### *Television*

Matthew Higgins took part in a one-minute ABC 'Snapshot' of arboreta and this could possibly be aired again, especially before and during Heritage Week.

Another alternative to using television is to invite a 'gardening' program, such as "Burke's Backyard" or "Gardening Australia", to do a segment on Bendora Arboretum and Hut. Such a segment could reach a large audience and increase the awareness of arboreta. Letters inviting the presenters could be written by members of FACTA.

The use of television advertising etc can be quite expensive and not recommended for this project, unless sponsored.

### *Radio*

Community and local radio stations eg 2CN and FM 106.3 are usually interested in conducting radio interviews on current happenings. Knowledgeable FACTA members are the ideal people to do this and the opportunity could be pursued on at events such as Heritage Week or World Forestry Day.

Radio stations Mix 106.3 and 104.7 actively promote the 'Community Switch' which is a free announcement service, provided by Actew AGL. This has web and telephone access.

### *Newspaper articles and notices*

Newspaper articles reach a wide range of people and can be a very effective tool to raise the profile of the Arboretum and Hut. There are two local newspapers in the Canberra region, *The Canberra Times* (produced daily) and *The Chronicle* (produced weekly). Both are managed by the same office in Canberra.

Newspaper articles may be submitted or details of events (walks, talks, meetings) that are coming up may be sent to the free community groups section. Both these papers have community sections that should by used by FACTA to promote arboreta happenings.

*The Canberra Times* has 'Fridge Door' for community notices, usually on the last page. Details need to be presented on a form that can be obtained from The Canberra Times (6280 2208 or email fridgedoor@canberratimes.com.au). Publication is not guaranteed, and contributions need to be received 4 days prior to publication.

*The Chronicle* newspaper has sections for community groups to advertise such as the 'Community Contacts' section which is a free service ideal for advertising upcoming talks and walks. Contributions should be sent in at least one week prior to preferred publication date.

There is also 'Communities Online', which is published through the ACT Government website. Information is on www.actcommunities.org.au

***News segment for television, radio and newspaper***

A news segment is one of the best ways to use the mass media. By having an interesting and unusual talk or event concerning arboreta, and making it 'media friendly' will attract local reporters. Some tips to hosting a 'media friendly' event include:

- A well-baited media release
- The best time for the media to visit is the morning, so it can have the section ready for that night's news.
- Must be interesting- this can be achieved through lots of displays, and unusual items.
- The point of contact must be easy to reach at all times
- Lots of opportunity to talk to people involved in the work
- Good photograph potential.

This makes the journalist's job easier and they may be more receptive to doing future items.

Suggested topics for an event include:

- Bendora Arboretum and hut- the sole survivor from January 2003
- Opening of the self – guided walk at Bendora arboretum
- History of forestry in the ACT
- The need for softwood timber
- Botany of conifers
- The future management of arboreta in the ACT

- Forest fungi
- The influence of arboreta on Australian forestry

An alternate method of creating a news story is to have a launch or opening, such as the self-guided walk for Bendora arboretum. To encourage media participation a high profile person should be invited to open the event. However, it should also be noted that if there is a time of high media activity (eg parliament sitting) the event may need to be postponed.

***Magazine articles***

Magazine articles are a great method to really detail some of the happenings in an arboretum. A number of magazines relating to forestry, heritage, gardening etc could be used.

Magazines which could have articles written include

Heritage in Trust
The Foresters (newsletter magazine for the Institute of Foresters of Australia)
Burkes Backyard
Scientriffic
Double Heilx
Gardening Australia
House and Garden

***Website***

A website is an effective means of distributing information to a wide variety of people, provided they have access to the internet. Website construction is generally quite expensive, and will require regular updating. However, by utilising resources and contacts through the various stakeholders, a website may be a feasible communication tool. A host would be needed to look after the website; it is suggested that ACT Forests (under the ACT Government), might be approached to act in this capacity as they are major stakeholders for many arboreta in the ACT. A 'web map' is shown in the attachments. This web map shows the basic structure of the website showing only the main web pages.

Linkages to and from websites is an important way to help people locate the desired website. Therefore all stakeholders should be closely linked to the website as well. Important links should include:

- ACT Forests
- ACT Government
- ANU School of Resources, Environment and Society
- Australian National Botanic Gardens
- Environment ACT/ ACT Parks and Conservation
- Directory of Botanic Gardens and Arboreta
- Garden Societies
- Kosciusko Huts association
- National Trust.

On the website should be information regarding all the arboreta in the ACT, with designated pages for Bendora Arboretum and Hut. Pages should contain a map (including location), species list, the catch phrase, a point of contact and general (& specific) information.

## Communication through affiliations and networks

In addition to media avenues identified, affiliations and networks can help to disperse information to the public and interested people. Some possible affiliations and networks that FACTA could utilise include:

- ACT Communities/ ACT Government
- ACT Forests
- ACT Heritage Unit
- Australian National Botanic Gardens
- CSIRO- Forestry & Forest Products
- Environment ACT/ ACT Parks & Conservation
- Environmental/ Forestry related email networks eg Farm Forestry newsletter, Australian Forest Growers
- Institute of Foresters of Australia (IFA)

- National Trust of Australia (ACT & Australia wide branches)
- NSW National Parks and Wildlife
- State Forests of NSW
- Universities (relevant courses).

FACTA is already affiliated with a large number of the organisations listed, IFA (ACT branch) and the National Trust (ACT). FACTA is associated with ANU School of Resources, Environment and Society, ACT Parks and Conservation, CSIRO Forestry and Forest Products, ACT Forests, ACT Heritage Unit, and the Conservation Volunteers Australia.

Methods include:

- articles in their magazines or newsletters
- information of upcoming activities
- usage – of arboreta for course field work. Note that ANU School of Resources, Environment and Society already uses Bendora Arboretum for field trips and tree identification studies.

Articles and information can be prepared by any of the stakeholders, in consultation with knowledgeable members from FACTA.

***Recommendation 12: FACTA members to utilise their communication affiliations and networks to promote arboreta in the ACT and FACTA events.***

## Public awareness events

Some possible public awareness events for Bendora Arboretum and Hut are listed below, together with the suggested activity that could be (or have been) run.

| Event | Time of Year | Activity |
|---|---|---|
| World Forestry Day | March | Display |
| Launches eg Self-guided walk | April | Media |
| Heritage Week | April | Display, walks and talks |
| Schools Tree Day | July | School visit, talk, walk |
| National Tree Day | July | Display and walk |
| National Science Week | August | Walk |
| Articles to media, networks and affiliations | Ongoing | Writing, talks, walks |

In this document it is assumed that FACTA will initiate most of the events surrounding the arboretum. However, depending on the resources, the main stakeholders may be called upon to facilitate and organise some events. Generally the above-mentioned events occur once a year and can be introduced into the FACTA events over several years.

A launch is generally a one-off event, and ideally it should be associated it with other related happenings in Canberra. For instance the self-guided tour might be launched at the beginning of Heritage Week, if possible with a high profile person.

Heritage Week in the past has been organised by a few dedicated individuals, who were willing to send in applications to run events, and often ran the event themselves. The formation of FACTA provides additional human resources for these tasks.

## Constraints

### *Resources*

Even with the formation of FACTA, resources of money, time, expertise, transport and manpower is limited. Though very interested in the Arboretum, ACT Parks and Conservation has limited funds to directly contribute to its management, though it has been indicated that

there may be some in - kind contribution of some resources. FACTA is a community group that works as and with volunteers. They try to secure grants to contribute to the costs involved with maintaining and enhancing the Arboretum and associated hut. ACT Forests is interested in the interpretation as they are active land managers of other arboreta which have mostly been burnt. With support of the stakeholders most aspects of this interpretation strategy should be able to be implemented.

Time that could be spent on the arboreta is a limiting factor and generally the only time that could be coordinated for ACT Parks and Conservation and FACTA to work together would be on the weekends, due to many people having weekday jobs. Liaison between these two organisations is crucial for organising working days on the Arboretum and Hut. This would in turn help to increase the manpower and allow the sharing of transport between Canberra and the arboretum - a distance of just over 50kms.

FACTA has a lot of forestry and tree botany expertise which should be drawn upon for overseeing the documents and signs produced. Individuals, under the guidance of the FACTA steering committee should be encouraged to submit articles for publication.

***Location and access***

Bendora Arboretum and Hut is reached after an easy 1.3 km walk from the Mt Franklin Road. A locked gate prevents general public vehicular access. Some believe that the walk to the hut and arboretum may be discouraging people, especially young families. Others believe that the walk to the hut and arboretum 'sets the scene' very nicely giving an opportunity for additional interpretive signage.

Perhaps the gate could be unlocked for special events, such as heritage week. There would be a need to block the adjoining national park roads as they may allow unwanted car exploration of the park.

***Vandalism***

Vandalism around Bendora Hut and Arboretum is infrequent, almost certainly owing to there being no access to motorised vehicles.

Encouraging greater usage of the area could lead to damage to the hut and trees, removal of plant material (eg pine cones), destruction of signs and littering, though the risk is low.

To counter this, ranger visitation to the area should increase, signage should be easily reproducible and inclusion on printed material, the National Park request to take only photographs and leave only footprints should be highlighted.

***Amenities***

The nearest amenities, consisting of picnic tables, fireplaces and toilets, are at Bulls Head, 5 km north along the Mt Franklin Road. Even though Bendora Arboretum and Hut is in the Bendora Dam catchment area, a contained composting toilet is recommended at the site to cater for visitors to the area.

To cater for families and other visitors, several tables could be placed in the area, one at the hut and the others in the arboretum itself. The wood for these tables could be sourced from the other burnt arboreta in the area, and treated with preservatives, if necessary.

## Summary of key recommendations

Recommendation 1: A FACTA Communication Strategy that encompasses FACTA's involvement in arboreta and the key messages that it wishes to communicate to the interested groups and stakeholders. It should also identify the key issues and key communication material to be developed and distributed.

Recommendation 2: Continuation of research into the key communication issues for-aboriginal, cultural/European and conservation for Bendora Arboretum and Hut.

Recommendation 3: Consistent and prominent usage of a catch phrase.

Recommendation 4: Prominent signage to Bendora Arboretum and Hut be developed.

Recommendation 5: Early photographs of Bendora Arboretum and Hut should be gathered for use in communication material.

Recommendation 6: Implement self-guided walk and supporting information.

Recommendation 7: Revise all printed material to further promote interest in the arboretum. The style should be consistent throughout arboreta brochures and maps.

Recommendation 8: FACTA to provide some basic information training to rangers and potential guides. It should include information that is important or specific to Bendora Arboretum and Hut.

Recommendation 9: Retagging and introduction of additional labels of the tree plots.

Recommendation 10: Use of the transportable display 'Arboreta in the ACT' and the gathering of any arboreta artefacts.

Recommendation 11: Develop more communication material that can be used to promote arboreta in the ACT (eg postcards, written articles, regular seminars etc).

Recommendation 12: FACTA members to utilise their communication affiliations and networks to promote arboreta in the ACT and FACTA events.

## Information sources

### Oral

| | |
|---|---|
| Alan Brown | FACTA |
| Brett McNamara | Environment ACT /ACT Parks and Conservation |
| Cris Brack | ANU School of Resources, Environment and Society |
| David Jamieson | ACT Forests |
| Debbie Argue | ACT Heritage Unit |
| Jennifer Dunn | ACT Heritage Unit |
| John Banks | ANU School of Resources, Environment and Society |
| Kim Wells | FACTA |
| Sam McKay | ACT Heritage Unit |
| Mark Mickelborough | ACT Parks and Conservation |
| Matthew Higgins | Historian |
| Tony Fearnside | FACTA |

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Higgins, M., 1994. *Skis on the Brindabellas*, Tabletop Press, Canberra

Higgins, M., 1995 *Bulls Head and the Arboreta*, National Trust of Australia, Canberra

**Attachments for Interpretation/Communication Plan for Bendora Arboretum and Hut.**

***Location of Bendora Hut and Arboretum***

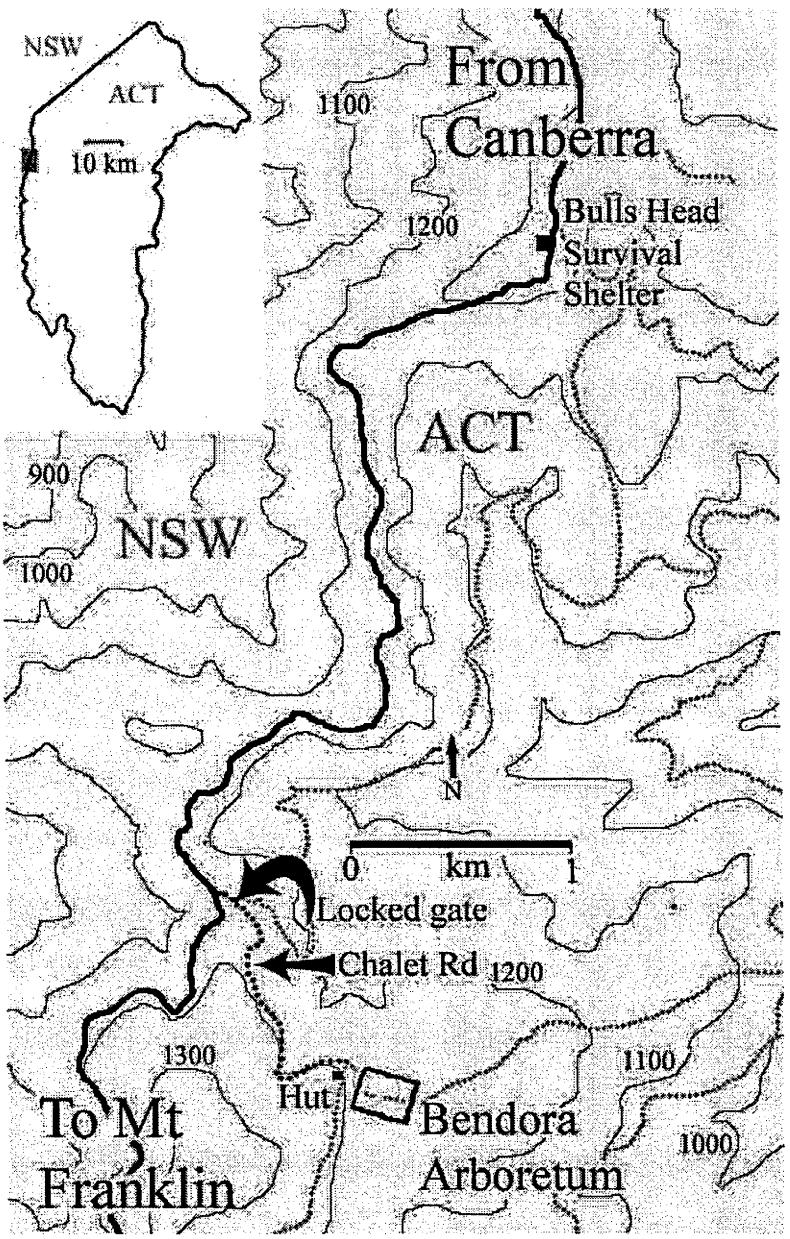



Figure: Location of Bendora Hut and Arboretum

(Map courtesy of Alan Brown)

## *Communication avenues*

**Communication avenues with Stakeholders:**

| Stakeholder | Email | Phone | Website | Newsletters | Letters to organisation | Meetings |
|---|---|---|---|---|---|---|
| ACT Parks & Conservation/ Environment ACT | √√√ | √√ | √ | √√√ | √ | √√√ |
| ACT Forests | √√√ | √√ | √ | √√√ | √ | √√√ |
| ACT Heritage | √√√ | √√ | √ | √√√ | √ | √√ |
| FACTA | √√ | √√ | √<br>√ | √√√ | √ | √√√ |
| ANU Forestry | √√ | √ | √<br>√ | √√ | √ | √√√ |
| CSIRO Forestry & Forest Products | √√ | √ | √ | √√ | √ | √ |
| **TOTAL** | **15** | **10** | **8** | **16** | **7** | **15** |

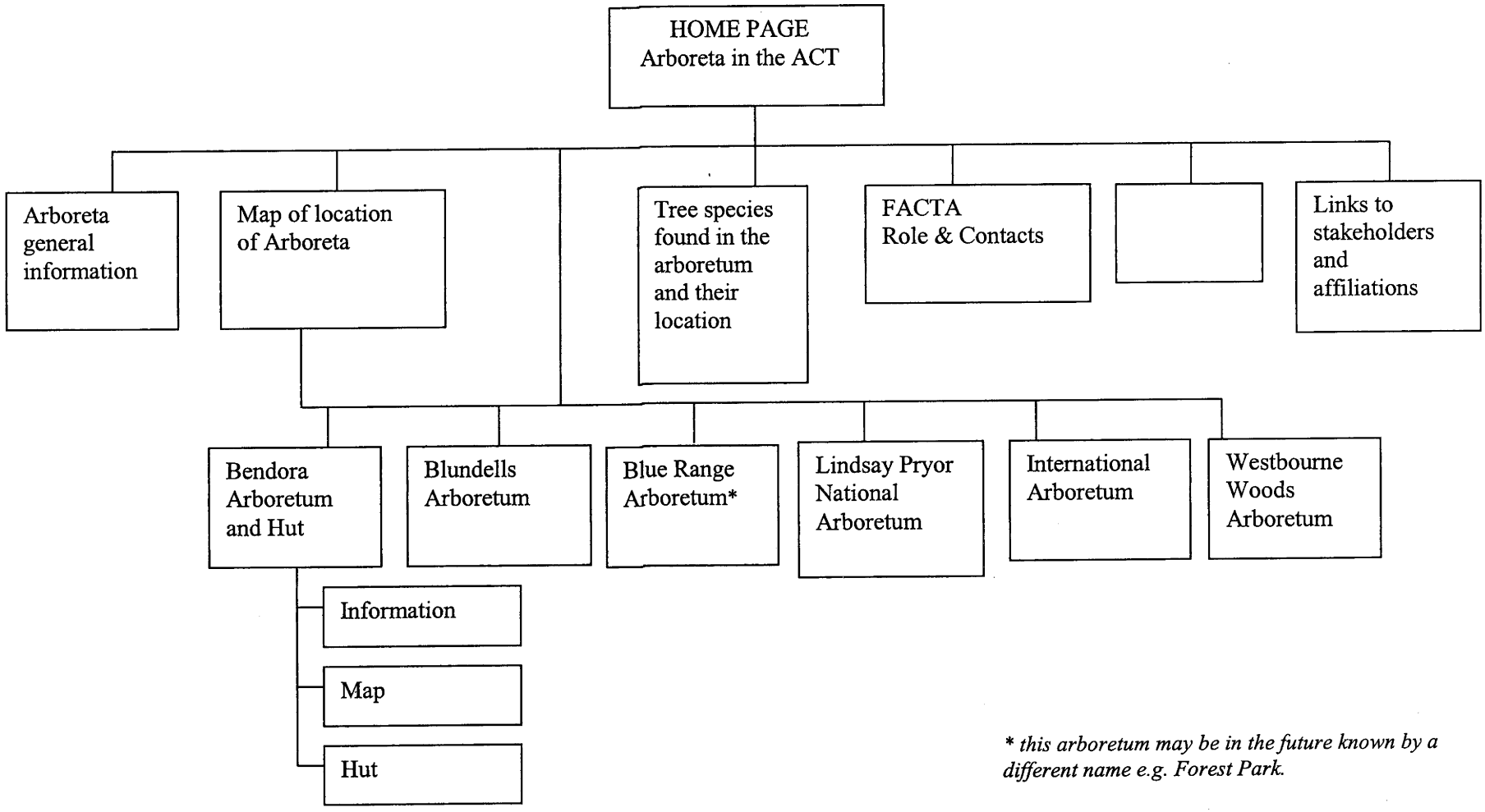
√ = low usage, √√ = medium usage, √√√= high usage

**Communication avenues from stakeholders to interest groups:**

| Name | Email | Phone | Fax | Brochures | Website | Newsletters | Media avenues | Letters to organisation | Word-Of-Mouth | General meetings/ presentations and field trips |
|---|---|---|---|---|---|---|---|---|---|---|
| School Teachers | √ | | √ | √√ | √√ √ | √√ | √√ | √ | √ | |
| Organisations | √ | √√ | | √√ √ | √√ | √√ | √√ | √ | √√ | √√ |
| General | √ | √ | | √ | √ | √ | √ | √ | √ | √√√ |
| Garden Societies | √√ | √ | | √√ | √√ | √√ | √ | √√ | √ | √√√ |
| Horticultural | √ | √ | | √√ | √√ | √√ √ | √√ | √√ | √ | √√√ |
| Outdoor pursuits | √ | | | √√ | √√ | √ | √√ | √ | √√ | √ |
| **TOTAL** | **7** | **5** | **1** | **12** | **12** | **11** | **10** | **8** | **8** | **11** |

√ = low usage, √√ = medium usage, √√√= high usage

## *Website basic set up design*




** this arboretum may be in the future known by a different name e.g. Forest Park.*

## *DRAFT wording for sign 'Arboreta in the ACT'*

**Arboreta or Arboretum?**

Arboretum means a 'place where many trees are grown for study or display. It is a tree botanic garden'. Arboreta (pl).

**Arboreta in the ACT**

More than 30 arboreta were planted in the ACT. Some became important recreational resource, such as Blue Range and Blundells. After the January 2003 fires, only one arboretum was left in the upland region of the ACT- Bendora.

Some of Canberra's plantation, garden and street trees were selected from these arboreta. Arboreta are important for tree conservation. They compare tree species from different origins, all in the one place, allowing species most suitable for cultivation to be identified.

Often rare, unusual and world-famous trees are planted in arboreta.

Active management of arboreta is important. It includes the establishment, pruning, thinning, and the eventual replacement of old trees. It is also important to ensure that trees do not spread as weeds. Associated facilities for recreation and provision of information for the community are increasingly important.

Friends of ACT Arboreta (FACTA) host seminars and field trips to arboreta. Contact FACTA on 02 6288 7656 or 02 6251 8308 and discover these living experiments.

**Map of ACT showing arboreta locations**

Photograph of a tree being measured in an arboretum

## *DRAFT wording for 'Bendora Arboretum' sign*

***Welcome to Bendora Arboretum!***

This arboretum was established between 1940 to 1967. It was established as one of the 'upland' or higher altitude arboreta in the ACT and contains many different tree species important for forestry and landscaping.

Feel free to wander around the area, or explore the 'self guided trail' and discover some of the unusual tree species in this arboretum.

| Map of Arboreta |
|---|

**Bendora Hut**

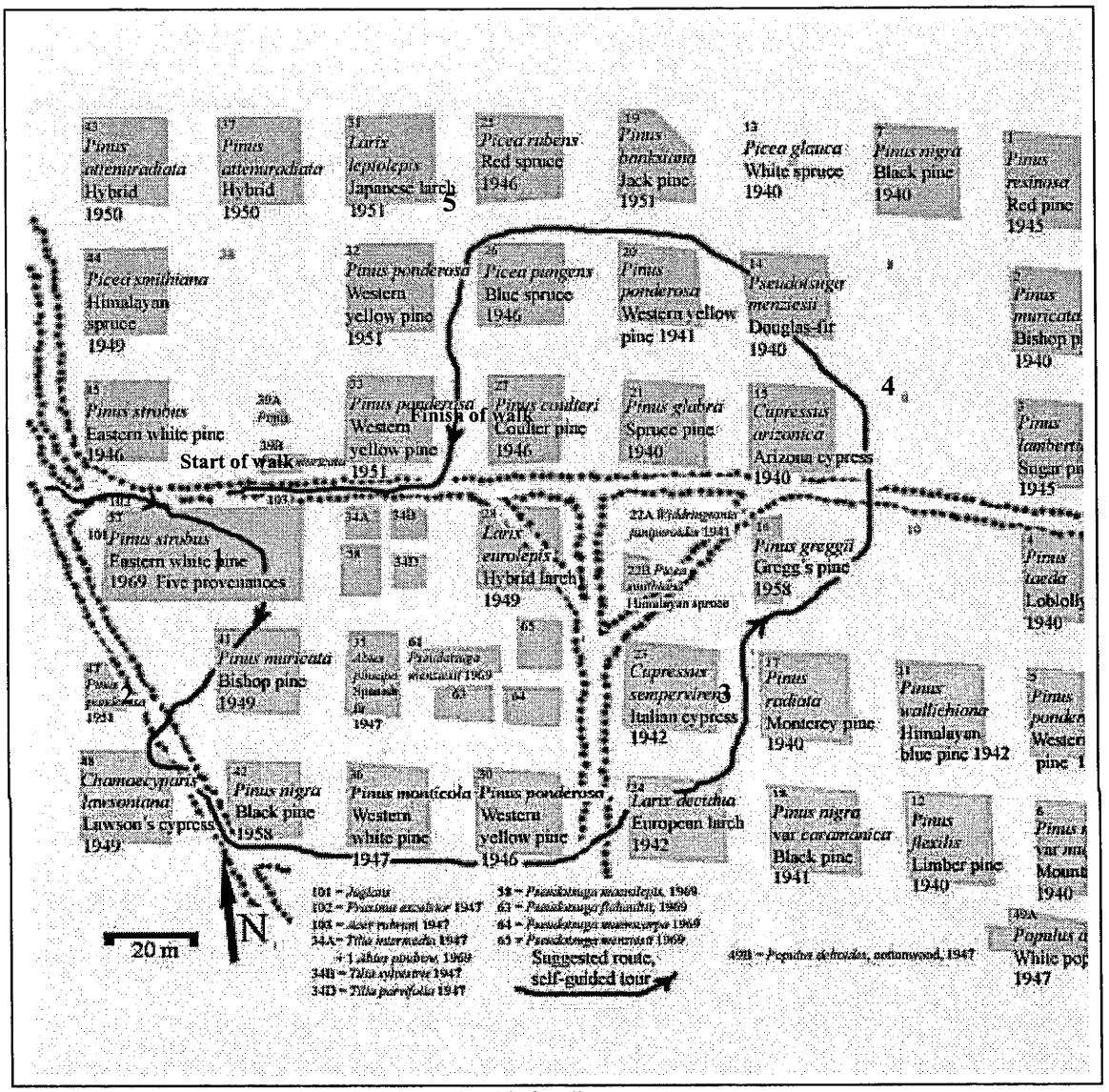
This galvanised hut was the mess hut for men establishing the arboretum in the mid 1940s. The original building also contained accommodation.

The hut was also important as a shelter for skiers on their way to the Mt Franklin ski chalet, when they used to travel along the Old Chalet Road.

| Photo of Bendora Hut by Geoff Hall. |
|---|

(as seen in Matthew Higgins' book 'Skis on the Brindabellas' 1994, Tabletop Press Canberra p96).

## *Self-guided walk information and species list*




***Map of Bendora Arboretum, showing the self guided walk***

(Map courtesy of Alan Brown)

**Key Messages for self-guided walk**

Key messages to be discussed at the various areas along the walk

1. ***Atmosphere of an arboretum***
    a. Looking at the undergrowth under plot 57
    b. Old eucalypt stumps
    c. Age and growth difference between *Pinus strobus* (Eastern White Pine, 1969) and *Pinus muricata* (Bishop Pine, 1949).

2. ***Lawson's cypress***
    a. Planted 1949 as well compare to what came from and look at the difference in growth rates, the tree form, original habitat, and uses eg wood in saunas
    b. Found in the USA, on mountain slopes and canyons
    c. Many horticultural varieties, has a light and durable timber.

3. ***Tree form***

(This stop should have a bench, so people can sit and enjoy the heart of the Arboretum).

    a. Difference between larch and pines
    b. Why *Pinus radiata* is so good in Australia
    c. Products obtained from the different tree species
    d. Diseases and pests, and the importance of arboreta
    e. Growth rates- all planted at about the same time
    f. *Pinus monticola* (Western White Pine, 1940)
    g. *Pinus ponderosa* (Western Yellow Pine, 1940)
    h. *Pinus wallichiana* (Himalayan Blue Pine, 1942)
    i. *Pinus flexilis* (Limber Pine 1940)
    j. *Pinus radiata* (Monterey Pine, 1940), good form, tall, fast growing
    k. *Pinus nigra* var *caramanica* (Black Pine), used to provide ship masts, sometimes grown on a 300 year rotation in Spain
    l. *Cupressus sempervirens* (Italian Cypress, 1942)
    m. *Larix decidua* (European Larch, 1942)

### 4. *Management issues*

a. Removal of some species, eg *Pinus contorta*, because it has the potential to become an invasive species

b. Failed plots-eg *Pinus sylvestris*, possibly due to weather

c. Wildlife- termites and wombat hole in area, birds-lyrebirds, gang gangs, cockatoos

d. Exotic wildlife- eg pigs

e. Mushrooms

f. *Cupressus arizonica* (Arizona Cypress, 1940) other uses such as essential oils, landscape uses, feature trees.

### 5. *Tree features*

(A bench should also be placed at this stop)

a. Naming a tree species

b. Looking at *Picea pungens* (Blue Spruce, 1946) and *Picea rubens* (Red Spruce, 1946, can provide bark for woven products, and resin)

c. Also the Japanese Larch (*Larix leptolepis*, 1951)

d. Tree cones on the *Pinus coulteri* (Coulter Pine, 1946).

**Species planted at Bendora Arboretum@**

| plot # | species | date planted | remarks |
|---|---|---|---|
| 1 | *Pinus resinosa* | 1945 | red pine - USA |
| 2 | *Pinus muricata* | 1940 | bishop pine - west coast USA |
| 3 | *Pinus lambertiana* | 1945 | sugar pine - west coast USA |
| 4 | *Pinus taeda* | 1940 | loblolly pine - southern USA |
| 5 | *Pinus ponderosa* | 1940 | western yellow pine - USA |
| 6 | *Pinus mugo var mughus* | 1940 | mountain pine - Europe |
| 7 | *Pinus nigra* | 1940 | Corsican pine or black pine - Europe |
| 11 | *Pinus wallichiana* | 1942 | Himalayan blue pine * |
| 12 | *Pinus flexilis* | 1940 | limber pine - USA |
| 14 | *Psuedotsuga menziesii*[4] | 1940 | Douglas fir (Oregon) - Canada |
| 15 | *Cupressus arizonica* | 1940 | Arizona cypress - USA |

[4] This plot is from seed collected from British Columbia.

| | | | |
|---|---|---|---|
| 16B | *Pinus greggii* | 1958 | Gregg pine - Mexico & central America |
| 17 | *Pinus radiata* | 1940 | Monterey (radiata) pine - California USA |
| 18 | *Pinus nigra var caramannica* | 1941 | Corsican pine or black pine - Europe |
| 19 | *Pinus banksiana* | 1951 | jack pine - central USA |
| 20A | *Pinus ponderosa* | 1941 | western yellow pine - USA |
| 20B | *Pinus ponderosa* | 1941 | western yellow pine - USA |
| 21A | *Pinus glabra* | 1940 | spruce pine - North East America |
| 22a | *Widdringtonia juniperoides* | 1941 | Widdringtonia - Sth Africa (3 trees only) |
| 22b | *Picea smithiana* | 1941 | Himalayan spruce * |
| 23b | *Cupressus sempervirens* | 1942 | Italian cypress - Europe |
| 24 | *Larix decidua* | 1942 | European larch* |
| 25 | *Picea rubens* | 1946 | red spruce - USA |
| 26 | *Picea pungens* | 1946 | blue spruce - USA |
| 27 | *Pinus coulteri* | 1946 | Coulter pine - USA |
| 28 | *Larix eurolepis* | 1949 | hybrid larch (European x Japanese)* |
| 30 | *Pinus ponderosa* | 1946 | western yellow pine - USA |
| 31 | *Larix leptolepis* | 1951 | Japanese larch* |
| 32 | *Pinus ponderosa* | 1951 | western yellow pine - USA |
| 33 | *Pinus ponderosa* | 1951 | western yellow pine - USA |
| 34a | *Tilia intermedia* | 1947 | lime - Europe (hybrid) |
| 34b | *Tilia sylvestris* | 1947 | lime – Europe also called *T. cordata* |
| 34d | *Tilia parvifolia* | 1947 | lime - Europe also called *T. cordata* |
| 35 | *Abies pinsapo* | 1947 | Spanish fir - Europe |
| 36 | *Pinus monticola* | 1940 | western white pine - USA |
| 37 | *Pinus attenuata x radiata* | 1950 | hybrid: P attenuata x radiata* |
| 40 | replanted in 1969 - see 57 | | originally alders (a few remain) |
| 41 | *Pinus muricata* | 1949 | bishop pine - western USA |
| 42a | *Pinus pinaster* | 1949? | maritime pine - southern Europe |
| 42b | *Pinus nigra var corsicana* | 1958 | Corsican pine - Europe |
| 43 | *Pinus attenuata x radiata* | 1950 | hybrid: *P attenuata x radiata** |
| 44 | *Picea smithiana* | 1941 | Himalayan spruce* |
| 45 | *Pinus strobus* | 1946 | eastern white pine - USA |
| 46a | *Fraxinus exelsior* | 1947 | European ash |
| 46b | *Juglans sp*<br>*Fraxinus raywoodii* | 1947 | walnut<br>claret ash - southern Europe |
| 46c | *Fraxinus oxycarpa* | 1947 | desert ash - southern Europe |

| | | | |
|---|---|---|---|
| 47 | *Pinus ponderosa* | 1951 | western yellow pine - USA |
| 48 | *Chamaecyparis lawsoniana* | 1949 | Lawson's cypress - western USA * |
| 49a | *Populus alba* | 1947 | white poplar - southern Europe |
| 49b | *Populus deltoides* | 1947 | cottonwood - USA |
| 56b | *Quercus cerris* | 1947 | Turkey oak - Europe |
| 57 | *Pinus strobus* | 1969 | eastern white pine - USA - 5 provenances |
| 58 | *Pseudotsuga macrolepis* | 1969 | Mexico |
| 61 | *Pseudotsuga menziesii* | 1969 | Douglas fir - California provenance |
| 63 | *Pseudotsuga flahaulti* | 1969 | Mexico |
| 64 | *Pseudotsuga macrocarpa* | 1969 | big cone Douglas fir - California |
| 65 | *Pseudotsuga menziesii* | 1969 | Douglas fir - Oregon (USA) |

* notable trees

@ names are as per the original records but have been amended in some cases.

Table from Tony Fearnside.

## *Draft FACTA sheet*

**Bendora Arboretum** *FACTA sheet no 3.*

**Established:** most plots were established between 1940 and 1969

**Location:** 1.3 km along the Chalet Rd, five kilometres south of Bulls Head along the Mt Franklin Rd, in the Brindabella Ranges.

**History:** Bendora Arboretum was the fourth highest arboretum established in the 'series' of arboreta in the ACT. It was initiated by Charles Lane Poole and planted by Lindsay Pryor and students from the Australian Forestry School at Yarralumla.

**Current Situation:** Namadgi National Park manages Bendora Arboretum and Hut.

**Climate:** Annual rainfall is about 1020 mm. The temperature range is from.....

**Altitude:** 1265 metres above sea level

**Soil:** Yellow podsolic and is relatively free- draining.

**Trees:** It contains examples of many famous trees of the world including spruces, pines, larches, firs, cedars and limes. To obtain a full species list, please contact the number below.

**Facilities:** Nearby Bendora Hut offers shelter. The closest toilets are at Bulls Head.

**Way Forward:** In the near future, there are plans to implement a self guided walk, additional plot labelling, interpretive signs and some facilities. Watch the area grow as a resource!

**Further information:** Contact Friends of ACT Arboreta (FACTA) on 02 6288 7656 or 02 6251 8308 or Environment ACT on 02...

Small location map and map of Bendora Arboretum

## *Display*

This display was devised by Charlotte Keller, with contributions from Kim Wells, Tony Fearnside, Alan Brown, and Marlene Lux. The electronic files for this display are available, please contact the author (phone number 02 6230 7436) for use of display or the files.

### Arboreta in the ACT

All displays have the catchphrase '*Arboreta..... a living experiment*'[5].

Three full suggested panels:

1. **'Early Days'** one 65 cm x 65 cm with pictures of early photos of ACT Arboreta
2. **'And Now'** a 65 cm x 65 cm vinyl with pictures of trees and people using the arboreta around Canberra. Highlight is a child holding one of *P. coulteri* cones (sourced from Bendora Arboretum).
3. **'Arboreta in the ACT'**: Will have 3 main photos and words detailing the use of arboreta in the ACT and around the world. It highlights certain features of arboreta and also has contact details for FACTA. Wording is as follows:

### Wording on the main sign (3): *Arboreta in the ACT*

An arboretum (pl. arboreta) is a planting of trees grown for **study or display**. It is a 'tree botanic garden'.

More than 30 arboreta were planted in the ACT. Some became important recreational resource, such as Blue Range and Blundells. After the January 2003 fires, only one arboretum was left in the upland region of the ACT, Bendora. There are, however, plans to rejuvenate Blue Range and Blundells arboreta.

There are also several lowland arboreta in the Canberra urban area - Westbourne Woods and Lindsay Pryor National Arboretum. The establishment of an international arboretum is an exciting complement to these.

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[5] These displays have the original catchphrase which has now been slightly altered to '*Arboreta..... living experiments*'

Together these form a **series of arboreta** in the ACT.

Some of **Canberra's plantation, garden** and **street trees** were selected from these arboreta.

Arboreta are important for **tree conservation**. They compare tree species from different origins, all in the one place, allowing species most suitable for cultivation to be identified.

Often **rare, unusual** and **world famous trees** are planted in arboreta.

**Active management** of arboreta is important. It includes the establishment, pruning, thinning, and the eventual replacement of old trees. It is also important to ensure that trees do not spread as weeds. Associated facilities for recreation and provision of information for the community are increasingly important.

Arboreta are a **resource for everyone**. They can be used for relaxation, recreation and education. Foresters, landscape architects, scientists and gardeners all use arboreta to determine how different trees respond to **various altitudes, soils, aspects** and **climates**.

Friends of ACT Arboreta (**FACTA**) host seminars and field trips to arboreta. Contact Friends of ACT (FACTA) on 02 6288 7656 or 02 6251 8308 and discover these living experiments.

## *Terms of reference*

### Communication/interpretation plan for Bendora Arboretum

Background

Bendora arboretum in the Brindabella Range was the only upland arboretum to survive thr fires of January 2003. It contains a fairly wide range of introduced conifers planted between 1940 and 1969, and is in a picturesque setting in Namadgi National Park, accessible from the Mt Franklin Road. In 2002, a citation was prepared for the arboretum to be placed on the ACT's Interim Heritage Places Register, which has now been done.

Subsequent to the fires, Friends of ACT Arboreta was successful in obtaining a small grant from the ACT Government's 2003-4 Heritage Grants Program to prepare conservation and management directions, history, and a guide to the arboretum in a form suitable for both electronic and print reproduction. This should enable the amenities and values that are afforded by the arboretum and adjacent hut to be better known to ACT residents. The main outputs expected from the grant will be two reports: one on management and conservation and on communications and the other on interpretation of these values.

Communications/ interpretation plan

The plan should be generated in a way that allows those interested in the arboretum's values, particularly staff of the ACT Parks and Conservation Service, to follow a logical development from basic concepts to proposed activities: an approach that will help future managers to draw up their own proposals. Discussions with ACTPCS managers during the formulation of the plan are required to ensure this.

The plan should consider, but not limited to:

- Identification of stakeholder/ interest groups
- Key communication issues including any aboriginal, heritage and conservation values
- Possible media avenues and public awareness campaigns for the arboretum
- Possible communication affiliations and networks
- A feasible labelling and signage plan for the arboretum

- Suggestions for other interpretative means such as ranger-guided tours, brochures, wording for possible web site entries etc.

The plan should be succinct, and presented to the project steering group and/ or Friends of ACT Arboreta before the final version is developed.

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This is the end of the Interpretation/ Communication Plan for Bendora Arboretum and Hut.

## Sub-thesis references

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## Sub-thesis appendices

### *Appendix 1: Field notes from meetings with stakeholders*

**Date:** 5 January 2004

**Time:** 3pm

**Duration:** 1 ½ hr

**Purpose:** Discuss any thoughts that ACT Parks and Cons may have in regards to the Interpretation Strategy at Bendora Arboretum and Hut

**Main issues covered:**

- Signage- possibilities as to where, content and stages
- Heritage issues
- FACTA Role
- Increasing vandalism
- Linkage of the forest into the hut and the arboretum- walk through the forest.
- Importance of Bendora Hut and Arboretum as Franklin Chalet now gone.

**My comments:**

- Very informative meeting
- Good thoughts
- ACT Parks and Cons will provide strong support (though maybe not money)

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**Date:** 8 January 2004

**Time:** 9.30am

**Duration:** ½ hour

**Purpose:** To meet local historian, who has done a lot of recording of the oral history of the Brindabellas. Also to give him and opportunity to say what he would like to see up there.

**Main issues covered:**

- Signage
- Bendora Hut
- Heritage week and possible activities (talk on the Wed night pre a walk in the arboretum)
- Can use quotes, photos and oral and media material developed by him.

**My comments:**

Knows a lot

Would be good to pass a draft via him

Very familiar with the people who were involved in it all

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**Date:** 9 January 2004

**Time:** 8.45am

**Duration:** 1 ½ hr

**Purpose:** To discuss with ACT Forests what they would like to see at Bendora.

**Main issues covered:**

- Linkage of signage to the other arboreta around Canberra
- Access
- Other Arboreta
- Signage, such as that at Blundells

- FACTA's role
- Heritage week

**My comments:**

Very informative and supportive

Very keen to get rolling

They are in constant communication with the ACT Chief Minister (Jon Stanhope)

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**Date:** 9 January 2004

**Time:** 1.30pm

**Duration:** 1 hour

**Purpose:** To discuss with ANU lecturers their teaching needs and target audience for the interpretation plan.

**Main issues covered:**

- Target audience
- Heritage week
- Brochures- technical and general
- Signage
- Vandalism

**My comments:**

More so purpose to let them identify that the target audience will not have the scientific background that their colleagues will have.

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## *Appendix 2: Field trip notes from 16 April 2003*

### Arboreta of the ACT

Notes from the field visit on the 16 April 2003

It is important to keep the Arboreta of the ACT for a number of reasons including:

1. Scientific value- finding best species and showing the difference between progenies
2. Heritage value- /the Arboreta had been established from 1932 and a lot of data had been obtained.
3. Public benefits – for recreation and information

**Issues that need to be addressed:**

1. **What shall we do with the burnt arboreta?**
    - It needs to be looked at as a case- by- case basis as only one arboreta out of the 19 is in tact after the January firestorm.
    - There were four in Namadgi National Park -Stockyard (now felled), Snow Gum, Piccadilly & Bimberi
    - The rest of the arboreta are in ACT Forests or National Planning Authority jurisdiction
    - Still need to look after the arboreta that has remained- Bendora
    - The question also needs to be asked of the authorities -What would they like to see there?

2. **What should be done immediately?**

A number of issues were raised:

***Safety Concerns***

- If the dead tree trunks are left standing then, in a few years time, public access will become a problem- no one can guarantee that the public will be safe

*Time Scale*

- How long should you wait?
- How long can be waited? This will depend on a number of issues, eg safety, species etc
- Blue stain is setting in to most species and the species are useless to use- location and fungi

*Species Selection*

- It is anticipated that there will be intense regeneration of some species and it may not be possible to control the regeneration. The Arboreta will need to be sprayed to kill any regeneration and then begin again with new seed (some imported)
- There will be quarantine issues (eg fusiform rust) in regards to the importation of new seed to re establish new arboreta
- Most sites will have to be completely replanted, while others may have some species that will regenerate- eg Californian Redwood
- Could even have a 'representation of the former arboreta'
- Scientific values will come in later in the establishment of the arboreta and use the previous results from the arboreta to get an indicative of what species can be replanted and ones that have potential for Australian Forestry. It is also a chance to establish new species and data collection to begin the next stage in Australian Arboreta.
- Possible future species that could be established are: 4-5 progenies of *P.radiata*, *P. pinaster*- before & after tree breeding, *P. elliotti* and *P. carribaea* x, *P. brutia* & *P. halepensis*, White pines, *E. globulus* & *E. camaldulensis* to name a few
- Should look at the commercial range and the interest in species

*Location*

- Arboreta should be accessible and near the public where possible, without compromising the fundamentals of establishing the arboreta

- Should integrate the series of arboreta- Westbourne woods, Pryors, Blundells & Bendora
- In the past visitation was never encouraged nor promoted, however, due to the beauty of Arboreta, it is possible to make them past of the recreational asset of the ACT

***Blundells Arboretum***

- This arboretum has the most potential- it is close to a picnic area and very accessible. It was one of the more well known arboreta in the ACT.
- It will need to have action fairly soon, due to its' location.

***Other Arboreta* :**

- **Blue Range-** this arboreta compliments recreational and science issues
- **Picadilly** has some redwoods- but is it overlapping topography & Rainfall.

**ACTION LIST**

- 6 weeks to write a submission & sell the concepts in it
- Final measurement of the Arboreta to close the books on all the data obtained in the duration of the present arboreta
- Investigate the availability of funds- there is the possibility of obtaining funding for the establishment & management of the ACT Arboreta possibly through the ACT Heritage Unit and the NHT or other means. There should also be a memorandum of understanding for the management of them
- Develop a pamphlet for Bendora Arboreta that highlights the importance of the site and other factors
- Bendora Arboreta needs to be added onto the list of Arboreta held at the ANBG

## *Appendix 3: Minutes from FACTA meeting*

All of these minutes are accepted FACTA minutes and are available from FACTA: FACTA PO Box 7418 Fisher ACT 2611.

**FRIENDS OF ACT ARBORETA**

***MINUTES OF A STEERING MEETING ON THURSDAY 27 NOVEMBER 2003***

***17:15 WOOD LIBRARY, Rm 12, FORESTRY, ANU***

***Present**: Fearnside, Banks, Brown, Jamieson, Keller, Leslie, Turnbull*

*1. **Apologies:** Boden, Wells*

2. **Minutes** of the previous meeting accepted

- The FACTA, and part of IFA, **submissions to the Non-urban Study** were distributed to all Friends as attachments to the last newsletter. The Greening Australia and Robert Boden's submissions as well as Mark Butz's report were mentioned in the newsletter as requested.
- Alan Brown, Tony Fearnside and Erika Leslie had a useful **meeting with Brett McNamara** and rangers Alan Bendall and Mark Mickelburough at Namadgi National Park Visitor Centre on 6 November. We need to move quickly to make suggestions on **Bendora Arboretum** (and hut?) so funding for priority work can be included in next year's estimates. TF said that the budget comes down about May, so our suggestion needs to be in soon after Christmas, if not before. AB reported that the consultant working on the Namadgi management plan has not specifically dealt with Bendora yet, but the Arboretum's listing by the Heritage Commission will ensure its treatment as an integral part of the Park. The successor to the current consultant has not yet been appointed.
- The FTB/CSIRO file on Bendora has been found – AB is using it at present. (TF will give AB a copy of his most recent map of the arboretum).
- AB has a draft for the ***Heritage in Trust*** **note on Bendora,** but needs to revisit the site to gather details of the route from the locked gate to the arboretum and

of selected plots before producing a suitable sketch map; this may prove a useful base document for CK's fact sheet. Forestry Bureau Annual Reports may give some detail of establishment (by forestry students, probably). CK needs detail of species. The Parks people were keen to use FACTA information to develop advisory material; they have special skills in interpretation and documentation.

- The Heritage Unit is expected to send a copy of the citation for Bendora Arboretum on the Interim Heritage Places Register to FACTA for comment before its public release.
- TF has spoken to Rosalind Ransome, landscape architect at NCA, concerning a concept plan for the **Lindsay Pryor Arboretum**. TF to write to NCA to confirm the conversation.
- **Recruiting** new Friends – article for the *Chronicle* (see 11). TF to use lists of attendees at past excursions to the arboreta as a possible source of new members.
- Next FACTA **Information Sheet**. CK to discuss with EL 2 December (see 11).

3. **Correspondence** – two items
    - **Heritage Festival** (see 10).
    - **Spatial Plan** – 17 December is the deadline for submissions. (The plan is primarily concerned with urban development). AB suggested we confirm our interest and our wish to be involved in further planning. A **workshop** to discuss/develop plans for the International Arboretum should be proposed, the aim of the discussion should be to clearly identify priorities for implementation. Ideas for further submissions should be sought by emailing our members. Proposals from FACTA should be sent to the Chief Minister as soon as possible — before alternatives become entrenched.

Although the Pryor Arboretum comes under NCA's jurisdiction and the International Arboretum under the ACT's, they must be considered conceptually as one entity – as complementary facilities. JB had suggested that the Pryor Arboretum could include Cypress Hill.

4. **Mark Butz's report on Blundells** is expected to be submitted to FACTA soon. Mark's talk on 18 November emphasised that there are issues other than what trees are to be replaced. There is little difference in altitude between Uriarra and Blundells, which makes for easy access 'by feet' between the two. The open flat is of geomorphologic interest as is the biodiversity of the area. Corroboree frogs, a rare species of cray and wingless grasshoppers are native to the site, as is *Eucalyptus camphora* . Efforts must be made to maintain the meandering creek bed; excessive flow caused by loss of vegetation could make for rapid erosion and a straight watercourse, which would have undesirable consequences for the biodiversity of the locality. TF suggested using aerial photographs to monitor changes in the area. A good buffer zone must also be established around the flat. Mark commented on dumped cars in the area and subsequently said his talk, subtitled 'the forgotten flat', should be renamed 'the Cinderella flat'.

A copy of the report should be sent with a covering letter to decision makers (e.g. ACT Forests as 'for information') with a covering letter. Mark's report needs to be part of a more comprehensive account.
There was general discussion about the report: the Blundell family's arrival, boron and phosphorus deficiency of the grassland, a correction of the report's 'Pryors poplars' – they were grown and planted by FTB in the 1960s.

DJ spoke of an upcoming meeting on **priority work in the Cotter Catchment** – ACTEW hopes to obtain water from the dam within two years; other riparian areas (Condor Creek, Blundells) will have lower priority. Weed control (blackberries) is to be carried out along significant streams.
The ACT government is expected to establish an **implementation team** to be headed up by George Tomlin (Chief Minister's Office) its task will include designing the proposed International Arboretum.

**5. Assessment of arboreta** — All burnt arboreta have been measured. We aim to do Bendora in the New Year. David Jamieson indicated that $500 could be made available for data entry. Cris Brack has expressed interest in examining data (in total about five sets are available – the earliest published is Don Nicholson's presentation to the first IFA Conference 1953?).

Further assessment of surviving trees (*P. canariensis; P. roxburghi; Taxodium; Cunninghamia lanceolata?)* at Blue Range is desirable as a contribution to the planning of redevelopment of the site. John van Pelt is preparing a concept plan – due in January – which FACTA should comment on. 'Trees from Italy' as well as species from the original arboretum might be used. (Rose Costello had received a heritage grant to write up the Italian internees' story of Blue Range). See 13.

DJ asked that FACTA draw up a list of species that could be planted at Blue Range and a visit was suggested in the near future (see below, # 13).

**6. Bendora work plan** etc.– see also 2. above. CK and TF are to meet on a communication and interpretation plan.

**7. Interim signage at arboreta** – DJ expressed interest in receiving proposed model and in implementation. Wording in the tabled example (Blundells) needs review.

**8. Snow Gum** – recommend abandonment. **Piccadilly** – three plots are alive (2 ponderosa; 1 nigra) — >30 m high — further assessment is needed before making any recommendations.

**9. Funding etc.** — CK to explore possibility of making and selling postcards based on photos of the arboreta. Formalisation of structure, and subscriptions, deferred.

**10. Heritage Festival** 1–11 April 2004. 'Places in the Heart'. John Gray has agreed to repeat the LDP and International Arboretum talks and walks. Mark Butz will show people over Blundells. We will open Bendora too. There is a need to coordinate with other interest groups!

**11. Communication**- EL will prepare another newsletter; we will encourage Mark Butz to prepare a newspaper article based on his Blundells report; CK will prepare the FACTA sheet for LDP arboretum.

**12. National Trust** contacts- meet Colin Griffiths of NT to advise him of our progress and interests.

**13. Further activities**- Visit Blue Range to further assess tree survival and contemplate options for the site- barbeque before Christmas.

**14. Further meeting** –5.25 pm, Thursday, 22 January 2004, ANU Wood Library Room 12.

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**FRIENDS OF ACT ARBORETA**

***MINUTES OF A STEERING COMMITTEE MEETING***

***17:15 THURSDAY 22 JANUARY 2004***

***WOOD LIBRARY, Rm 12, FORESTRY, ANU***

**Present:** Fearnside, Banks, Boden, Brown, Jamieson, Keller, Laity, Leslie, Thomas, Wells

**1. Apologies:** none

**2. Minutes of the previous meeting:** accepted

**3. Matters arising**

The FACTA's suggestion to the Non Urban Study to hold a workshop to discuss options for further developments of the Pryor/International arboreta was well received. The proposed article on Bendora for Heritage in Trust was not ready in time for the 10 January deadline and cannot appear until the June issue.

AB was thanked for his review of the draft heritage citation for Bendora. Our suggestions included the preparation of a conservation management plan for the arboretum as well as the hut, the replacement of missing or senescent plots and more extensive high pruning as a fire protection measure. One further suggestion emerged in discussion: the area be fenced, particularly to assist plot re-establishment.

Communication with NCA (TF — Rosalind Ransome) is still pending.

Fifty copies of Mark Butz's report, Blundells Flat Area ACT: management of natural and cultural heritage values, background study for the Friends of ACT Arboreta have been printed. Mark will retain 20, which leaves 30 for FACTA to distribute. Of these, copies should be sent to stakeholders, Erika will keep three to lend to Friends and the residue, if sufficient in number, could be sold for $10 (cost of printing = $7 per copy plus editing) either through the Botanic Gardens bookshop or from Old Parliament House. KW brought copies of the report to the meeting. Mark will be encouraged to prepare an article, based on the report, for the Canberra Times.

Data entry for the arboreta is nearly completed (Blundells is outstanding), using money provided by ACT Forests.

An interim sign for Blundells is to be erected by ACT Forests after some wording changes.

Picadilly – John Turnbull has suggested holding over any recommendations until we know how many trees do survive. The presence now of a little bit of green on the tips of otherwise dead trees does not necessarily equate to their survival.

The Heritage Festival will take place in the first week of April. Three tours have been registered: Bendora by Friends (3 April), Blundells by Mark Butz (10 April), Pryor/International by John Gray (4 April). Any signage should be prepared in time for this event.

**4. Correspondence**

To Rob Hunt, NSW Wildlife Service saying that Snow Gum could be cleared.
To ACT Forests: a map of trees apparently still alive at Blundells.

**5. Blundells**

We had almost $4000 in grant money; so far a little more than $1200 has been spent on Mark's report and possibly $500 will be spent on data entry. [The total grant for Blundells is $3850 (with no provision for GST). So far we have spent $1907.80 (incl.

GST of $148.07) and are committed to spend money on data entry — maybe $500 —, and editing.]

Ken Taylor (UC) visited the arboretum and flat with TF and KW. He recommended preservation of the cultural (Aboriginal, early European) and other (environmental and forestry) landscapes, and replanting trees in the same blocks – need for a Think Tank. ST suggested we ask Ken Taylor to provide a short written summary.
Blundells has species with new growth TF. Logging is preferable to bulldozing the site. The timing of further felling of burnt trees depends on another Chinese order; the first boatload (of mixed species) has now left from Port Kembla. Should another boatload be required, the timber could be supplied from Blundells — ACT Forests (and FACTA) should be prepared for a new order.

JB and ST noted the risk of windthrow in isolated individual plots surrounded by a logged area – there will be only one opportunity to get rid of killed trees.

**6. Blue Range**

John van Pelt's Blue Range report had been received by ACT Forests the previous day, and would be sent to FACTA within the next two weeks. The creek area will be restored, possibly using cricket bat willows and apple trees. In 1927 the Duchess of York planted willows in the grounds of the present-day Forrest School, and these were probably the source of the material subsequently put in at Blue Range (by Cyril Cole, Chief Forest Officer).

There is no commitment to re-establish the Blue Range arboretum.

**7. Bendora**

[The total amount of the heritage grant for Bendora is $4727.27 (with no provision for GST). So far we have committed $1000 for Charlotte's report and $50 for two copies of Matthew Higgins' 1995 oral history 'Bulls Head and the Arboreta'].

To further the interpretation work, CK and TF visited Brett McNamara. He is supportive of FACTA's role, suggesting another approach to the Heritage Unit for funding [although outlays for expensive work such as fencing would not be easily

funded by this type of grant]. CK noted the need to interpret the arboreta as a whole, encompassing stakeholders, interest groups, media and signage. ST suggested approaching the Garden Historical Society for support.

There is a long walk (1.4 km) to the arboretum from the locked gate. There is nothing unusual in asking people to walk (e.g. to huts in National Parks), but some potential visitors are inhibited by or unable to cope with this physical challenge. The road is so narrow that passing and turning at any point between the gate and the arboretum is almost impossible. It could be made 'one-way' and open only on weekends and public holidays. Another problem is that the road at present offers access to areas in the Bendora/Corin catchment beyond the arboretum, to which Parks wishes to minimise visitation. The meeting decided that better access was needed without compromising the area. AB has a key to the Parks lock on the gate. There was talk of having a separate additional lock with 3–4 keys as an interim measure. We need to formulate a management plan, including suggestions regarding access, by April. A Think Tank is to be arranged by TF and KW.

**8. LDP/International (JB brought a map)**

JB had repeated his slide show on overseas arboreta for the ACT Government, and is to prepare a brief on issues and options. The two arboreta must be linked together, for example with a pedestrian overpass across the freeway at Cypress Hill. Planning will include a national competition. Boundaries of the International Arboretum are being determined — the cork oaks will be included, together with an adjacent remnant of woodland and Dairy Farmers Hill, and it will reach nearly to the zoo. It fits in with the ideas of Griffin, Pryor and Weston. A fire abatement zone is necessary. There will be a mixture of natives and exotics along the Parkway. The competition should seek ideas, not detail — what should be planted between clumps of trees? The site is attractive — it has varied topography; three main drainage basins provide nice subsets. The 1911 plan envisaged geographic themes — India, Pakistan, Korea, Chinese etc. North of the cedars, where radiata has been lost, trees with links to Australian history could be planted: e.g. trees allied to the development of small towns, or industries such as tan bark or eucalyptus oil. The Information Centre will need water (as will at least some of the trees). The only entrance from the Parkway is through a cutting with limited

visibility: it is inviting as you cannot immediately see everything that is there. There are good vistas across the lake, and a walking track through the cedars.

Some cedars south of Cypress Hill, damaged in the 2001 fires, will be replanted, and others will be thinned and pruned. In 2004, planting will be done along the Parkway, the entrance will be landscaped and 5000 Himalayan cedars will be planted.

CK has an outline for a new FACTA sheet (no.2) on LPNA.

**8. National Trust**

Colin Griffith from National Trust had been invited to the last meeting of the Steering Committee. RB still has contacts there but is no longer on the Council. KW will see both Colin Griffith and Dianne Dowling regarding continued National Trust support.

**9. FACTA products**

CK tabled four exemplars of possible postcards. Costs for printing: 40 for $32, $50 for folding cards; printing on the back will increase cost; CK will investigate.

**10. Any other business**

KW Regreening Team – ANU, ACT Forests etc; role for FACTA?
An article by Toby Jones from Greening Australia is due for media release on Friday.
Write formally to Tony Bartlett regarding possible strategic alliances or partnerships?
TF suggested having David Spencer and Neil Cooper interviewed for an oral history project. Higgins may still be interested in conducting interviews — perhaps he should be approached.

JB has spoken to John Gray about assessing the plantings that survived in the LPNA. An update of the 1979 report by David Spencer is needed.

**11. Next meeting**

Thursday 22 March 2004, 17:15 Wood Library, Rm 12, Forestry, ANU

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**MINUTES - FACTA STEERING MEETING**

29 MAY 2004

WOOD SAMPLE ROOM, ANU FORESTRY

**Present**: Wells (Chair), Keller, Leslie, Gray, Brown, Thomas, Laity, Fearnside, Boden, Brack (part). Meeting commenced at 5.35pm.

**Apologies**: None

**Membership**: Following the death of John Banks, either Cris Brack or Ann Gibson will attend FACTA meetings to represent the School of Resources, Environment & Society ANU.

Dave Jamieson has transferred to Western Australia and KW welcomed John Freeman, representing ACT Forests.

Minutes of the previous meeting were accepted.

**Business arising from minutes**:

1) Blue Range:

Consolidated comments on Van Pelt Report on Blue Range have been sent to ACT Forests.

2) Bendora:

ST advised that minor edits have been sent to TF. ST recommended that two photographs be selected for the title page of the CMP before submission to ACT Heritage Unit. CK presented the communication plan for Bendora Arboretum and Hut which is also to be sent to ACT Heritage Unit.

TF arrived 5.50pm and advised that draft CMP for Bendora had been discussed with a range of people in ACT Forests and Environment ACT. TF agreed to be responsible

for final edit of both reports and submission to Heritage Unit and to discuss with them expenditure of uncommitted funds amounting to about $1,773.

TF indicated that plot-by-plot measurements and assessments of work to be recommended were required at Bendora. AB advised that several plots have mixed species and field visit would be required to identify these. Later agreed that a work party be held on Saturday 22 May, meeting at Forestry House at 9am. KW to advise IFA members and invite them to participate.

AB advised that National Trust has asked FACTA to lead a walk in Bendora Arboretum: in mid- to late October probably best. A new brochure would be required for the visit as the present brochure was a simple update of one written for the AFS reunion in 2000.

AB advised that he has written an article on Bendora for the next issue of the National Trust's 'Heritage in Trust' journal (see 5 - Communications below) and this could form the basis for a new brochure.

3) Blundells:

The meeting agreed that uncommitted funds amounting to approx. $1,280 could be used for data analysis.

KW expressed the view that 'think tank' outcomes may not have provided sufficient conclusions for FACTA to comment on all recommendations in the Butz report. For example, there were differing views on the extent of the Arboretum in relation to the road. It was desirable that FACTA should consider its position in relation to recommendations made in the Butz report but a mechanism to do this had not been agreed.

TF advised that some hydrologists on site at Blundells had suggested that a weir could be constructed near the footbridge site to assist in raising the watertable of the Flat. The meeting felt that it could not support this proposal without further comment from other stakeholders e.g. herpetologists. (The concrete crossing higher up the creek did this for the land upstream from the crossing.)

4) Oral Histories:

No action had been possible on proposed interviews (see previous Minutes). Mark Butz was to be contacted again.

5) Communications:

AB article on Bendora has been submitted for publication in 'Heritage in Trust'.

The poster display prepared by CK was well received at the World Forestry Day dinner and the meeting thanked CK and Marlene Lux for their efforts. Agreed that posters would be held at ACT Forests and be available for display at any functions where FACTA wished to promote the arboreta.)

CK produced postcards which have sold well and will be reprinted.

6) Data entry & distribution:

CB advised that it may be possible to use Blundells data in a student exercise.
KW asked if ACT Forests will use the data. JF replied positively, pointing out that ACT Forests had lost almost all records in the 2003 bushfire and any relevant records would be useful in future management.

7) Report on Heritage Festival activities:

TF advised that the Bendora walk had been postponed as the road had been closed for safety reasons. (10 people had registered.)

Ten people attended the walk in the Lindsay Pryor National Arboretum.

Seven adults and four children attended the Blundells Flat walk.

There was some general discussion on publicity and the difficulty of attracting people during Heritage Festival when so many alternative events were available.

**New Business:**

i) Future of FACTA:

There was some discussion about the future of FACTA and whether it should aim to be a sub-group of IFA or the National Trust, or be separate. The latter would require a Constitution and Incorporation, both of which are time-consuming tasks. It was agreed that this issue could not be resolved at this meeting and would need further detailed discussion.

ii) Future Members program:

There is to be a working bee at Bendora Arboretum on Saturday 22 May and a walk arranged for National Trust members in October.

iii) Story of the Arboreta:

TF recommended that a grant application be made to carry out this task.
As applications under the ACT Heritage program close shortly, it was doubtful if an application could be submitted this year. (See viii re grant applications below).
CK suggested that FACTA produce a calendar for sale, similar to the one produced for the CSIRO Seed Centre. ST said that calendars are a highly competitive market with only a short period for sales. It was agreed that, at this stage, it would be better to accumulate a collection of photographs which could be used for publicity purposes.

iv) Progress of ACT Forest Headquarters:

JF advised that salvaged timber from different species at Blundells Arboretum will be used in the new ACT Forests Headquarters. Also advised that *P. radiata* will continue to be the main species planted for commercial purposes. AB suggested that *P. canariensis* should be considered, particularly where fuel reduction by burning was proposed as it has some fire resistance.

v) Molonglo River Corridor and International arboretum:

RB advised that he had, that morning, met the consultants carrying out the West Basin study and asked them had they obtained data on flood releases from Scrivener Dam and constraints they might apply to activities downstream such as construction of weirs for recreation. The consultants advised they had not thought of this and would do so.

The consultants also advised that they were having difficulty in coming to conclusions about the proposed International Arboretum and its relationship with the Lindsay Pryor

National Arboretum. This will presumably be discussed in the Public Discussion Paper which will be released as part of their consultancy.

vi) York Park Oaks:

RB advised that publicity for a walk on May 9 would appear in the media next week. EL would include the news of the event in the newsletter to be distributed next week and KW would ask for IFA (ACT) members to be informed by email.

vii) FACTA involvement in Westbourne Woods Walks:

JG advised that he needs twelve guides to be able to run monthly walks but this year, he is short by two. It was suggested that he seek further walk leaders, eg, from IFA membership. AB suggested he contact the ANBotanic Gardens Guides' co-ordinator, an advantage of these people is that they have undergone a training program and have confidence in leading groups.

viii) Possible Grant Applications:

CB reported on a student exercise measuring *Pinus canariensis* from Blundell's Arboretum which had been burnt in the 2003 bushfire which showed that the growth rate was about one-half to three-quarters of *P. radiata*. He will be seeking a grant to continue this work with different age classes of *P. canariensis*.

KW advised that Mark Butz has sought FACTA support for a Heritage Grant application to continue further work on Blundells Flat. It was agreed that FACTA should give 'in principle' support.

A date for the next meeting was not set.

Meeting closed at 7.30pm.

- RB 1 May 2004

## *Appendix 4: Ethics application 2004/201*

***ALL APPLICATIONS TO BE TYPED*** ***Version current from 1 February 2004***

THE AUSTRALIAN NATIONAL UNIVERSITY

**HUMAN RESEARCH ETHICS COMMITTEE**
**APPLICATION FORM**

**Surname of Researcher: Keller**
**First name/s: Charlotte**
**Title (e.g. Ms., Mr., Dr. etc,): Ms**

**Position Held (staff, postgraduate, undergraduate, etc.): POSTGRADUATE**

**Student or Staff ID no. (if applicable): u4001917**

**Dept/School/Centre: Centre for the Public Awareness of Science (CPAS)**

**Mailing address: 112 Duffy St, Ainslie, ACT 2602**

**Telephone: 02 6230 7436**
**Fax:**
**Email: charlotte.keller@anu.edu.au**

***For students:***
**Name of ANU supervisor: Dr Sue Stocklmayer**
**Email address of ANU supervisor: Sue.Stocklmayer@anu.edu.au**

**PROJECT TITLE: Arboreta Interpretation**

**Date of this application: 30 June 2004**
**Anticipated start date for project: 1 August 2004 (ethics section)**
**Anticipated end date: 1 November 2004**

1. ***The researcher/s***
   **Who are the investigators (including assistants) who will conduct the research and what are their qualification and experience? Please include their Department/School/Centre (or external institution for external researchers). Students should not include supervisors at this point unless they are actually participating in the research project as partner researchers.**

Ms Charlotte Keller (investigator) is conducting the investigation into the development and effectiveness of an interpretation/development plan for an arboretum. Qualification of the investigator include:

- Bachelor of Science (Forestry) ANU (graduated 1998)
- Associate Diploma of Applied Science (Amenity Horticulture) CSU-Riverina (graduated 1994)
- Currently studying for Master of Science (Scientific Communication) ANU

There are no assistants or joint researchers in this research.

2. ***Understanding the national guidelines, the "National Statement on Ethical Conduct in Research Involving Humans" (1999)***
**Can the proposer certify that the persons listed in the answer to Question 1 above have been fully briefed on appropriate procedures and in particular that they have read and are familiar with the national guidelines issued by the National Health and Medical Research Council (the *National Statement on Ethical Conduct in Research Involving Humans*) (cited below as the "National Statement")? If there are guidelines from any relevant professional body with which the researcher/s are familiar they should also be listed below.**

I, Charlotte Keller can certify that I have read the national guidelines 'National Statement on Ethical Conduct in Research Involving Humans (1999) by The National Health and Medical Research Council

3. ***Purpose and design of the proposed research***

***Purpose***
**(a) Briefly describe the basic purposes of the research proposed** *(in plain language intelligible to a non-specialist).*

I am seeking further information and evaluation on the interpretation/ development plan for Bendora Arboretum and Hut. (An arboretum is a 'tree botanic garden'). This plan details communication material to be used to raise the public awareness of the arboretum and hut and encourage visitation to the area.

Many of the arboreta planted in the ACT were established from the 1920's in the Brindabella Mountains. Reasons for establishing them were to identify trees that:

1. could be used as a possible timber tree in south-eastern Australia
2. could grow in Canberra, under various geographical conditions.

The devastating January 2003 bushfires in Canberra razed 18 of 19 arboreta located in the Brindabella Mountains. Bendora Arboretum survived and it has been proposed that it become listed on the National Heritage Register. The purpose of my research will be to do a case study on Bendora Arboretum and Hut through documenting the process surrounding the interpretation/ development plan. The ultimate goal will be to determine the effectiveness of the document.

***Design***
**(b) Outline the design of the project** *(in plain language intelligible to a non-specialist).* **(If interviewing people or administering a survey/questionnaire, please attach either a list of the broad questions you propose to ask, or a copy of the questionnaire.)**

The project involves documenting the process of planning for the development of the Arboretum and an associated interpretative guide for the public. As the science communicator involved in this process, I am principally responsible for the design of the printed material. For this thesis I wish to document the planning process and the guiding principles behind the development. The thesis therefore has the following requirements:

- documentation of Arboreta history in the ACT
- interviews with personnel in Environment ACT, ACT Forests, Friends of ACT Arboreta and ANU SRES, and possibly others who may be suggested by those interviewed.

This application seeks approval to conduct the interviews described. The interviews will be open ended. The interview protocol is attached (Attachment 1).

4. *Sources of data involving humans*
**To ensure compliance with privacy legislation the committee needs to know your sources of information, i.e. where you are obtaining data involving humans. If you are using individual participants, tick at (a). If you are accessing personal records held by government departments or agencies, or by other bodies, e.g. private sector organisations, please tick and complete the relevant sections (b), (c) and/or (d) below.**

N/A

(a) Individual subjects ( )

(b) Commonwealth Department/s or agency *(specify)** ( )……

(c) State/Territory Department/s or agency *(specify** ( )……

(d) Other sources (*specify*) ( )……

*Please include an estimate of how many records you expect to access: ……

5. *Personal identifiable data for medical/health research*
**Are you obtaining personal identifiable data specifically for medical/health research that is held by a government or private sector agency? (The committee needs this information to determine whether it needs to comply with relevant National Health and Medical Research Council guidelines relating to privacy legislation.)**

No.

6. *Recruitment*
**Describe how participants will be recruited for this project. Indicate how many participants are likely to be involved, how initial contact will be made, and how participants will be invited to take part in this project.** A copy of any relevant correspondence should be attached to this application. **Does the recruitment process raise any privacy issues, e.g. does the researcher plan to access personal information to identify potential participants without their knowledge or consent? Describe the steps to be taken to ensure that participation or refusal to participate will not impair any existing relationship between participants and researcher or institution involved.**

Interviews will be sought with personnel in Environment ACT, ACT Forests, Friends of ACT Arboreta and ANU SRES, (anticipated total 5 or 6) and possibly others who may be suggested by those interviewed.

Participants will be given the opportunity to participate in the interview through, initially signing a copy of a 'Consent Form' (Attachment 2), and later having the opportunity to review their comments as quoted in the text.

The interview subjects will be initially contacted by telephone or email. The project will be described to them and their assistance in the form of an interview will be sought. At the time of initial contact, it will be made clear that the purpose of the research is to gather material for a sub-thesis; that material from the interview may be quoted in the sub-thesis; and that people who are interviewed may be identified in the sub-thesis.

7. *Arrangements for access to identifiable data held by another party*
**In cases where participants are identified from information held by another party (e.g. government department, non-governmental organisation, private company, community association, doctor, hospital) describe the arrangement whereby you will gain access to this information. Attach any relevant correspondence.**

N/A

8. *Vulnerable participants*
**Will participants include students, children, the mentally ill or others in a dependent relationship? If so, provide details.**

No.

9. *Payment*
**Will payment be made to any participants? If so, give details of arrangements.**

No.

10. *Consent*
**Describe the consent issues involved in this proposal (***see the National Statement, in particular Section 1.7-12, and other sections relevant to your research***). Describe the procedures to be followed in obtaining the informed consent of participants and/or of others responsible. Attach any relevant documents such as a consent form, information sheet, letter of invitation etc. If you do not propose to obtain written consent (e.g. if working with non-literate people) give a detailed explanation of the reasons for seeking oral consent, describe the procedure you intend to adopt, and specify the information to be provided to participants. If you have answered YES to Question 8 above please address any issues of consent and the possibility of coercion.**

Before the interview takes place, the person being interviewed will be asked to sign and keep a copy of a declaration that they consent to giving the interview, to being quoted and identified in the sub-thesis. In some circumstances, pseudonym names may be the preferred method of quoting (Attachment 2).

I do not anticipate any confidential information to be discussed nor raised.

*11. Protection of privacy (confidentiality)*
**Describe the confidentiality issues involving in this proposal. Give details of the measures that will be adopted to protect confidential information about participants, both in handling and storing raw research data and in any publications. Blanket guarantees of confidentiality are not helpful. If the term "confidential" is used in information provided to participants, a full description of what precisely confidentiality means in the context of this research should be given. You should be aware that, under Australian law, any data you collect can potentially be subpoenaed. Depending on the nature of your research, it may be helpful to qualify promises of confidentiality with terms such as "as far as possible" or "as far as the law allows".** *[See the National Statement, in particular Sections 1.19, 18 and Appendix II]*

I will provide the participants with an opportunity to participate, be involved without being named, or to not participate at all. Consent will be obtained through the signing and filling out of the form, or not-signing it at all.

There is no intention to collect confidential information about subjects.

For the duration of the project correspondence, tapes of interviews and notes will be stored in a locked filing cabinet in my home.

12. *Cultural or social considerations*
**Comment on any cultural or social considerations that may affect the design of the research.** *[See the National Statement, in particular Sections 1.2 and 1.19].*

None identified.

13. *How the research might impact on participants*
**Describe and discuss any possible impact of the proposed research on the participants or their communities that you can foresee. This might include psychological, health, social, economic or political changes or ramifications. Discuss how you will try to miminise any impact.** *[See the National Statement, in particular Sections 1.3 to 1.6 and Section 1.14]*

None identified.

14. *Other ethical and any legal considerations*
**Comment on any other ethical considerations that are involved in this proposal, including any potential for legal difficulties to arise for participants.**

None identified.

15. *Benefits versus risks*
**Describe the possible benefit/s to be gained from the proposed research. Explain why these benefits outweigh or justify any possible discomforts and risks to participants. In framing your explanation make explicit reference to the ethical considerations mentioned in your answers to previous questions on this form.** *[See the National Statement, in particular Sections 1.3-6 and 1.13-14]*

These interviews will enhance the arboretum interpretation/ development strategy by providing more information and allowing a more comprehensive and feasible plan to be implemented. This has the potential to become the base for interpretation material for arboreta in the ACT and across Australia.

16. *Handling possible problems arising from the research*
**Describe the arrangements you have made to handle concerns and complaints by participants, or emergencies involving participants or researchers.**

None identified.

## 17. RESEARCH PROTOCOL CHECKLIST

There are some key ethical principles that need to be addressed in your protocol (as an ethics application is known). In particular the committee needs to see how you have addressed the issue of informed consent and the issue of confidentiality, i.e. how the identities of participants will be protected in the raw research data and in published material. The usual way to obtain informed consent is in writing, by use of a consent form that is signed by the participant and retained by you. Because you retain the consent form the same information needs to be included in an information sheet that participants retain. Both the consent form and the information sheet should include your name, contact details, title and brief description of the project, details on how the identities of participants will be protected (both when storing the raw research data and in its published form), a statement that participation is voluntary and participants can withdraw at any time, and contact details for the Human Research Ethics Committee in case of any ethical concerns. If you do not propose to seek written consent, you need to explain why oral consent will be sufficient and how you propose to obtain it.

**Please tick the relevant boxes below to indicate what has been included in your protocol:**

Outline of proposal and purpose — Yes ✓ No
Measures to be taken to protect confidentiality — Yes ✓ No
Explanation of how written informed consent will be obtained — Yes ✓ No

If written consent is not being sought, justification of a verbal consent procedure is included — Yes

Full details on investigators (name, institution, etc.) — Yes ✓ No
All researchers on this project are familiar with the national guidelines (*National Statement*) — Yes ✓ No
Details re how participants will be recruited — Yes ✓ No

Is personal data from a Commonwealth department/agency or private sector organisation being used? — Yes No ✓
Details on how cultural and social sensitivities will be addressed — Yes No ✓ N/A

Consideration of likely risk to participants (e.g. psychological stress; cultural, social, political or economic ramifications) — Yes No ✓ N/A

Do your research participants include:
Aboriginal or Torres Strait Islander peoples — Yes No ✓
Children and young people (i.e. minors under the age of 18) — Yes No ✓
People with an intellectual or mental impairment — Yes No ✓
People highly dependent on medical case — Yes No ✓
People in dependent or unequal relationships — Yes No ✓

Do you intend to pay participants? — Yes No ✓

Description of method and amount is included — Yes

Description of clinical facilities (for medical research) — Yes No ✓ N/A

Period of research — Yes ✓ No

**SUPPORTING DOCUMENTATION**: *The committee requires copies of all relevant documents*

Consent form to be signed by participants — Yes ✓ No
Information sheet for participants to retain — Yes ✓ No

Dot point list of the points that will be made when seeking verbal consent — Yes

List of interview questions — Yes ✓ No
Copy of questionnaire/s — Yes ✓ No
Invitation or introductory letter/s — Yes ✓ No

| | | |
|---|---|---|
| Publicity material (posters etc.) | Yes | No ✓ |
| Other (*specify*) | Yes | No ✓ |

## 18. SIGNATURES AND UNDERTAKINGS

**PROPOSER OF THE RESEARCH**

**I certify that the above is as accurate a description of my research proposal as possible and that the research will be conducted in accordance with the *National Statement on Ethical Conduct in Research Involving Humans* (version current at time of application). I also agree to adhere to the conditions of approval stipulated by the ANU Human Research Ethics Committee (HREC) and will cooperate with HREC monitoring requirements. I agree to notify the Committee in writing immediately of any significant departures from this protocol and will not continue the research if ethical approval is withdrawn and will comply with any special conditions required by the HREC.**

Name and title (please print): Ms CHARLOTTE KELLER
(Proposer of research)

Signed: C. Keller Date: 30/6/04

---

**ANU SUPERVISOR**

***Where the proposal is from a student, the ANU Supervisor is asked to certify the accuracy of the above account.***

**I certify that I shall provide appropriate supervision to the student to ensure that the project is undertaken in accordance with the undertakings above:**

Name and title (please print): J.R. SUE STOCKMAYER
(ANU Supervisor)

ANU Department/School/Centre: CPAS

Signed: S.M. Stockmayer Date: 30.6.04

---

## COMMENT ON PROJECT FROM HEAD OF ANU DEPARTMENT/GROUP/CENTRE:

***The Head of ANU Department/School/Centre is asked to certify that this proposal has his/her support:***

**I certify that:**

- **I am familiar with this project and endorse its undertakings;**
- **the resources required to undertake this project are available; and**
- **the investigators have the skill and expertise to undertake this project appropriately.**

Any additional comments (optional):

Name and title (please print): DR SUE STOCKLMAYER
(Head of ANU Department/Group/Centre)

ANU Department/School/Centre: CPAS

Signed: Sm Stockl... Date: 30.06.04

---

**Applications should be submitted as follows:**
**(a) 13 hard copies (one master copy with original signatures + 12 photocopies) and all supporting documentation**
**PLUS**
**(b) an identical email version emailed to** Human.Ethics.Officer@anu.edu.au.

**Hard copies of the completed protocol form, together with all supporting documents, should be sent to:**

The Secretary
Human Research Ethics Committee
Research Services Office
Chancelry 10B

The Australian National University ACT 0200

Tel: 6125-2900
Fax: 6125-4807
Email: Human.Ethics.Officer@anu.edu.au

**Please ensure that the application includes (a) your signature (b) signature of Head of ANU School, Department or Centre; and (c) signature of ANU supervisor (for students).**

**Attachment 1**

**Key Information to be relayed to the interviewees before the interview (via email/ phone);**

I am currently undertaking a Master of Science (Scientific Communication) at the Australian National University. Part of this degree consists of the writing of a sub-thesis and I have chosen to focus the topic of my sub-thesis on the development of an interpretation/ development plan for Bendora Arboretum and Hut.

The devastating January 2003 bushfires in Canberra razed 18 of 19 arboreta in the Brindabella Mountains. Bendora Arboretum survived and it has been proposed that it become listed on the National Heritage Register.

The purpose of my research will be to do a case study on Bendora Arboretum and Hut through documenting the process surrounding the interpretation/ development plan. The ultimate goal will be to determine the effectiveness of the document.

I would like to ask you some questions relating to the development and your understanding of interpretation for Bendora Arboretum. This research and the interview process has been approved by the Human Ethics Committee of the ANU. In agreeing to be interviewed, I ask that you will sign a consent form agreeing to the interview.

***Questions***

Preliminary: Consent form completed?

1. What is your understanding of an arboretum?
2. What is your understanding of 'interpretation'?
3. What do you understand to be methods of interpretation in an arboretum?
4. Have you read the Interpretation strategy for Bendora Arboretum and Hut?
5. Have you been to Bendora Arboretum?
6. What else would you like to see included in this interpretation strategy?
7. Do you have any general comments regarding Bendora Arboreta?

**Attachment 2-** CONSENT FORMS

## CONSENT TO USE INTERVIEW MATERIAL
## COPY TO BE KEPT BY CHARLOTTE KELLER

**Purpose of Interview**

I am currently undertaking a Master of Science (Scientific Communication) at the Australian National University. Part of this degree consists of the writing of a sub-thesis and I have chosen to focus the topic of my sub-thesis on the development of an interpretation/ development plan for Bendora Arboretum and Hut.

The devastating January 2003 bushfires in Canberra razed 18 of 19 arboreta in the Brindabella Mountains. Bendora Arboretum survived and it has been proposed that it become listed on the National Heritage Register.

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I would like to ask you some questions relating to the development and your understanding of interpretation for Bendora Arboretum. This research and the interview process has been approved by the Human Ethics Committee of the ANU. In agreeing to be interviewed, it is asked that you sign this consent form agreeing to the interview.

---

I, ..... am a willing participant in an interview conducted by Ms Charlotte Keller from Centre for the Public Awareness of Science, Australian National University.

I note that participation is voluntary and that I may withdraw at anytime. I note that I will be given the opportunity to comment on the interpretation of material from the interview in the final draft from Ms Keller's' sub-thesis.

I also agree to:

The interview being recorded on audio tape — Yes / No

*Or*

The interview being recorded by the taking of notes — Yes / No

AND

Being quoted and identified in the sub-thesis — Yes / No

*Or*

Being quoted through a pseudonym only in the sub-thesis — Yes / No

*Please note*: all interview material will be stored in a locked filing cabinet in my home for the duration of the study.

Signed:_____ Date: _____

*Contact details:*

Charlotte Keller

CPAS, Faculty of Science

The Australian National University

ACT 0200, Australia

Tel: 02 6230 7436

E-mail: charlotte.keller@anu.edu.au

*If there are any concerns about this project, please contact:*

The Human Research Ethics Committee

C/- Sylvia Deutsch

Human Ethics Officer, Research Services Office

The Australian National University, ACT 0200

Tel 02 6125 2900, Fax 02 6125 4807

E-mail:Human.Ethics.Officer@anu.edu.au

## CONSENT TO USE INTERVIEW MATERIAL
## COPY TO BE KEPT BY INTERVIEWEE

I am currently undertaking a Master of Science (Scientific Communication) at the Australian National University. Part of this degree consists of the writing of a sub-thesis and I have chosen to focus the topic of my sub-thesis on the development of an interpretation/ development plan for Bendora Arboretum and Hut.

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I note that participation is voluntary and that I may withdraw at anytime. I note that I will be given the opportunity to comment on the interpretation of material from the interview in the final draft from Ms Keller's' sub-thesis.

I also agree to:

The interview being recorded on audio tape Yes / No

*Or*

The interview being recorded by the taking of notes Yes / No

AND

Being quoted and identified in the sub-thesis Yes / No

*Or*

Being quoted through a pseudonym only in the sub-thesis Yes / No

*Please note*: all interview material will be stored in a locked filing cabinet in my home for the duration of the study.

Signed:_____ Date: _____

*Contact details:*

Charlotte Keller

CPAS, Faculty of Science

The Australian National University

ACT 0200, Australia

Tel: 02 6230 7436

E-mail: charlotte.keller@anu.edu.au

*If there are any concerns about this project, please contact:*

The Human Research Ethics Committee

C/- Sylvia Deutsch

Human Ethics Officer, Research Services Office

The Australian National University, ACT 0200

Tel 02 6125 2900, Fax 02 6125 4807

E-mail:Human.Ethics.Officer@anu.edu.au

THE AUSTRALIAN NATIONAL UNIVERSITY

# THE AUSTRALIAN NATIONAL UNIVERSITY

## HUMAN RESEARCH ETHICS COMMITTEE

Outcome of Consideration of Protocol

**Researcher:** Ms Charlotte Keller
**Contact details:** Postgraduate Student, Centre for the Public Awareness of Science, Faculty of Science
**Protocol No.** 2004/201
**Title:** Arboreta interpretation
**Date on application:** 30 June 2004 **Date received in Research Office:** 1 July 2004

**On behalf of the Human Research Ethics Committee,**

**I approve/~~do not approve~~ the above protocol.**

**Approval is subject to the following conditions:**

.....

.....

.....

**Reasons for non-approval:** .....

.....

.....

.....

**Review due:** .....

**Chairperson:** ..... **Date:** 16-9-04

**(Dr Peter Hiscock)**

THE AUSTRALIAN NATIONAL UNIVERSITY

RESEARCH OFFICE

Ms Yolanda Shave
Secretary, Human Research Ethics Committee

CANBERRA ACT 0200 AUSTRALIA
TELEPHONE:(02) 6125 7945
FACSIMILE: (02) 6125 4807
EMAIL: Yolanda.Shave@anu.edu.au

17 September 2004

Ms Charlotte Keller
Centre for the Public Awareness of Science
Faculty of Science
The Australian National University
ACT 0200

Dear Ms Keller,

**Protocol 2004/201**
**Arboreta interpretation**

On behalf of the Human Research Ethics Committee I am pleased to advise that the above protocol has been approved as per the attached *Outcome of Consideration of Protocol.*

For your information:

1. Under the NHMRC/AVCC *National Statement on Ethical Conduct in Research Involving Humans* we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research and whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the Committee of any changes to your protocol in the course of your research, and when you complete or cease working on this project.
3. The validity of this current approval is five years' maximum from the date shown on the attached *Outcome of Consideration of Protocol* form. For longer projects you are required to seek renewed approval from the Committee.

Yours sincerely,

Ms Yolanda Shave
Secretary, Human Research Ethics Committee