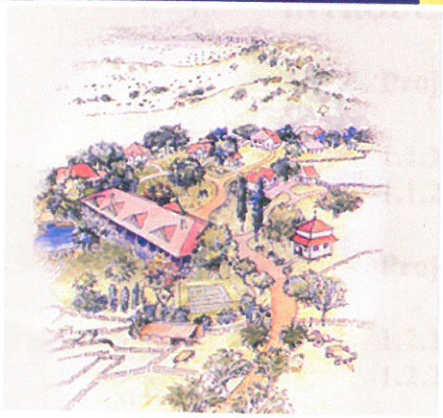
Old Hidden Vale
RETREAT



December 2000:

OLD HIDDEN VALE
WILDLIFE TOURISM IMPLEMENTATION AND MANAGEMENT PLAN
Consultancy Report for Stage 1

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LIST OF ATTACHMENTS

1. Wildlife species lists for Old Hidden Vale and the Shires of Ipswich and Laidley (Section 2.2), plus additional information about native fauna to be found in the Old Hidden Vale area.
2. Information to support recommendations regarding the Management of Existing Wildlife (Section 3.1).
3. Information about Vertebrate Pest Control (Section 3.3).
4. Information about Vegetation Management (Section 3.4).

KEY REFERENCES

These key references are to be found in the appropriate attachments.

- Lockyer Catchment Centre (2000). Living in the Lockyer. A Landholders Guide to Land, Water, Wildlife and Vegetation Management in the Lockyer Catchment and Surrounds. Mimeo.
- Lockyer Resource Management Group (1994). Principles and Guidelines for Land Use Planning in the Lockyer. A Final Draft Paper. Lockyer Resource Management Group Incorporated.
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- Boulter, S.L., Wilson, B.A., Westrup, J., Anderson, E.R., Turner, E.J. and Scanlan, J.C., (200). Native Vegetation Management in Queensland. Background, Science and Values. Dept. Natural Resources, Qld.
- Higginbottom, K, Green, R., Leiper, N., Moscardo, G., Tribe, A. and Buckley, R. (2000). Evaluation of organised Tourism Involving Wild Kangaroos. CRC for Sustainable Tourism Report Series, Report Number xx.
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EXECUTIVE SUMMARY

It has been proposed that the development and implementation of wildlife tourism at Old Hidden Vale (OHV) be done in two stages:

Stage 1. To develop existing wildlife as an attractor for OHV visitors in the short term. This will be the focus of this report.

Stage 2: To reintroduce and breed endangered native species within a predator-proof enclosure. This will be implemented probably in three to four years time.

The **overall objective** of Stage 1 is to attract and encourage existing native wildlife at OHV to enhance the experience of its visitors, while still allowing for the existing beef cattle operation.

The concept is strongly supported.

This report aims to provide:

1) Background information about OHV.
2) Recommendations for action pursuant to the objectives.
3) Sources of relevant information .
4) Institutions and people who can provide additional information.

Major Recommendations

1) It is **recommended** that a mammal and bird survey be conducted on the whole OHV property to identify

- The species present

- The areas or sites within the property where the various mammal species are found, where they may be best viewed and where specific habitat improvements may be most effective. This is a key recommendation because the results of this survey will then facilitate the implementation of many of the other recommendations.

2) To improve their availability and proximity to visitors, it is recommended that a program of supplementary feeding for macropods be introduced, and that specific grassed areas around OHV be watered to ensure a continuous green pick.

3) It is recommended that feeding stations for a range of mammals and birds be established in appropriate locations around OHV identified by the fauna survey (Recommendation 1).

4) It is recommended that appropriate native vegetation be established in areas around OHV which have been identified as wildlife viewing sites.

5) It is recommended that nest boxes for a range of native species be installed in and around the wildlife viewing sites on OHV.

6) It is recommended that self-guided wildlife activities be planned in conjunction with the fauna survey, and that interpretive materials be developed to complement these activities.

It is also recommended that advice regarding the development of OHV wildlife information be sought from the CRC for Sustainable Tourism.

7) It is recommended that a "wildlife guide" be appointed to the OHV staff, but that guiding be only a small part of this person's duties.

It is also recommended that all staff at OHV who interact with the public be trained to become familiar with the local wildlife, so that they too can contribute to the visitors' appreciation of them.

8) It is recommended that a long-term predator management and monitoring program be implemented at OHV.

9) It is recommended that the vegetation management be integrated, and that this will require a Property Vegetation Management Plan (PVMP). The other vegetation management recommendations will then be incorporated into this plan.

10) For certain key areas of retained vegetation it is recommended that the cattle be fenced out, and that some replenishment of native vegetation will be required.

11) It is recommended that the retention and development of riparian vegetation is a priority.

12) It is recommended that areas of regrowth on OHV be cleared for pasture as determined by the PVMP.

1. INTRODUCTION

1.1 Project Purpose

1.1.1 Background:

Old Hidden Vale (OHV) is a 4000 hectare property situated above the foothills of the Franklyn Vale about one hour from Brisbane. It lies across the boundary of the Ipswich and Laidley Shires, with approximately three quarters of the property in the Ipswich Shire. The Little Liverpool Range runs through the property. OHV is being developed to attract and cater for both conference and tourist visitors and to cater for the increasing eco-tourism industry.

The property is also managed as a commercial beef cattle station which currently has approximately 500 head of Brahman-cross animals.

Current features that exist within the property include the conference, restaurant, accommodation and sports facilities, walking trails, four-wheeled drive track and horse-riding trail.

OHV has unusual combination of qualities which lend themselves to the development of a range of quality wildlife and ecotourism activities, in particular its size, diversity of habitats, topography and proximity to Brisbane. These aspects will serve to make

the educational experience enjoyable while also catering for the needs of visitors who simply seek to appreciate the scenic qualities of the area.

1.1.2 Wildlife Tourism Development for OHV

It has been proposed that the development and implementation of wildlife tourism at OHV be done in two stages:

Stage 1: To develop existing wildlife as an attractor for OHV visitors in the short term. This will be the focus of this report.

Stage 2: To reintroduce and breed endangered native species within a predator-proof enclosure. This will be implemented probably in three to four years time.

1.2 Project Objectives (Terms of Reference)

1.2.1 Overall Objective

The overall objective of Stage 1 is to attract and encourage existing native wildlife at OHV to enhance the experience of its visitors, while still allowing for the existing beef cattle operation.

1.2.2. Specific Objectives

Within this overall objective, Stage 1 will include the following aspects:

1. Short-term strategies to attract and encourage local native wildlife at OHV.
2. Strategies for vertebrate pest control on the property.
3. Strategies for vegetation management, in particular weed control on the property.
4. Legal requirements pertaining to the use of native fauna on OHV.
5. Staffing requirements for the implementation of these strategies.
6. An estimated budget and timetable for possible implementation of these strategies.

1.3 Scope of This Report

In endeavouring to satisfy the overall and specific objectives of Stage 1, this report aims to provide the following:

1) Background information about OHV, and in particular, about its existing wildlife.
2) Recommendations for action pursuant to the overall and specific objectives.
3) Sources of information relevant to OHV staff implementing these recommendations.
4) Institutions and people in the Ipswich and Laidley Shires who can provide information and assistance in implementing these strategies.

2. BACKGROUND, ENVIRONMENT AND FAUNA

2.1. Climate and Vegetation

OHV is described as comprising largely ironbark/spotted gum soils with some blacksoil/basalt areas on the ranges. The property has been used for more than 100 years for cattle, and as such has been largely logged for timber and cleared for grazing.

Considerable regrowth has subsequently occurred particularly along the hillsides and ranges so that the vegetation in these areas is still mainly open eucalypt forest with minor areas of vine scrub.

Summers at OHV are hot with the highest temperatures recorded in January and February. Average annual rainfall is about 800mm although this can be extremely variable both from year to year and across the property itself. Rainfall is seasonal with most occurring in late spring and summer. Much of the rain falls in storms causing minor sheet erosion and gully formation. Droughts should be regarded as a normal part of the climate.

The major weed species on OHV include the following:

Lantana	(*Lantana camara*)
Creeping lantana	(*Lantana monteridensis*)
Green cestrum	(*Cestyn oerginr*)
Groundsel bush	(*Baccharis halimifolia*)
Chinese elm	(*Celtis simensis*)

Some mother of millions (*Bryophyllum tubiflorum*) is found adjacent to the roads.

2.2 Native Fauna of the OHV Area

The environment of south-east Queensland has been modified by more than a century of sheep and cattle grazing. The region was invaded about a century ago by the hare, two exotic predators (the fox and the cat), and an exotic granivore (the house mouse). Feral goats and pigs are also widespread. The last 100 years has seen dramatic changes in the mammal fauna of the region as a consequence of these and other European related factors.

The loss of native mammal diversity in the area is typical of changes that occurred in the drier parts of the mainland south of the Tropic of Capricorn. This area has the highest rate of extinctions recorded on any continent. Most of the species which have become extinct or have declined greatly in range and abundance were terrestrial animals with adult body weights in the critical weight range of 35-5500gm (Burbidge & McKenzie 1989). Almost 90% of native mammals with this weight range have declined or become extinct. In contrast, the fauna of Tasmania and the Wet Tropics are virtually intact.

The causes of these changes in the status of the fauna were probably a combination of erratic rainfall causing population fluxes and declines, competition from introduced herbivores (sheep, cattle, hares and goats), habitat changes caused by clearing, grazing and changed fire regimes and introduced predators. It is known with

certainty that foxes and feral cats are capable of rapidly eliminating small populations of critical weight range mammals (Catling 1988; Christensen 1988; Short *et al* 1994; Gibson *et al* 1994; Short *et al* 1992) and of preventing others from increasing (e.g. Kinnear *et al* 1988). Foxes were established in Victoria in the early 1870s and had spread into the arid zone early in the present century.

Fauna species lists for the region are given in Attachment 1. These include:

1. Wildnet species lists for:
    1.1. Area of a 10km radius around the OHV homestead
    1.2. Ipswich City
    1.3. Laidley Shire
2. Ipswich City Council species lists for:
    - Grandchester
    - Rosewood
    - Malabar
    - Mt. Marrow
    - Perry's Knob
    - Haigslea
    - Tallegalla

These lists have been compiled from information collected over the years by Nature Research Volunteers. As such there tends to be a predominance of birds, and obviously there is considerable overlap amongst them. Consequently they should not be regarded a comprehensive fauna surveys, but more as a guide to what may be found in the area.

Nevertheless, small to medium sized mammals of particular significance to wildlife tourism on OHV include:

- Short-beaked echidna (*Tachyglossus aculeatus*)
- Northern-brown bandicoot (*Isoodon macroivus*)
- Koala (*Phascolarctos cinereus*)
- Sugar glider (*Petaurus breviceps*)
- Greater glider (*Petauroides volans*)
- Common brushtail possum (*Trichosurus vulpecula*)
- Black striped wallaby (*Macropus dorsalis*)
- Eastern grey kangaroo (*Macropus giganteus*)
- Whiptail wallaby (*Macropus paryi*)
- Red-necked wallaby (*Macropus rufogrisens*)

These, plus several of the bat species, are likely to be the species most easily and often seen by visitors either during daylight hours or by spotlight after dark.

In addition, two species of mammals are declared "vulnerable" in the OHV area, and may be appropriate for captive breeding and release as part of Stage 2. These are:

- Spotted –tailed quoll (*Dasyurus maculatus maculatus*)
- Brush-tailed rock wallaby (*Petrogale penicillata*)

In order to preserve endangered species and to maintain as much of their genetic variability as possible, formal species recovery programs have been/are being prepared for such species.

The preferred position is to conserve wild populations in the wild through appropriate protective measures and/or to re-establish locally extinct species in previously occupied habitat. In the main, translocation of locally extinct fauna into previously occupied habitat will not work unless the factors ('threatening processes') causing the original extirpation have been eliminated or are manageable to within tolerable limits. If they are not, the released population is likely to be wiped out (Griffith *et al* 1989, Short *et al* 1992, Snyder *et at* 1996). Thus reintroductions of species into fox or feral cat occupied habitat are very likely to fail (Short *et al* 1992, Copley 1994).

There is a large diversity of birds in the region. Raptors (birds of prey), parrots and cockatoos and small passerine birds are conspicuous elements of the avifauna. Many waterbirds are also to be found in temporary ponds and creeks and, of course on the permanent dam adjacent to the OHV homestead. Important and vulnerable species include

- Powerful owl (*Ninox strenua*)
- Glossy black cockatoo (*Calyptorlynchus lathanii*)
- Black breasted button quail (*Turnix melanogaster*)
- Rufous scrub bird (*Atrichornis rufescens*)

Because of the more conspicuous nature of birds and mammals, it is easy to forget that the reptiles, frogs, fish and invertebrates are a diverse and fascinating fauna. Some of these species can be displayed or interpreted in "free-range" situations. However, many are best displayed in other ways indoors or by guided tours.

2.3 Introduced Wildlife

The list of introduced wildlife includes:

- Foxes
- Cats
- Dingo hybrids
- Hares
- Feral pigs
- Feral goats.

Their management and control will be discussed in section 3.2.

3. KEY PROJECT ELEMENTS

3.1 Management of Existing Wildlife

3.1.1 Objectives

As shown by the species lists in Attachment 1, there is an abundance of native fauna (mammals, birds and reptiles) already living in the OHV area. The key objective of Stage 1 is to manage this existing wildlife so that it increases in abundance and is more readily able to be seen by visitors to the property.

However notwithstanding the species lists for the area, no formal fauna surveys have been conducted at OHV. It is **recommended** that a mammal and bird survey be conducted on the whole OHV property to identify

1) The species present

3) The areas or sites within the property where the various mammal species are found, where they may be best viewed and where specific habitat improvements may be most effective. Such a survey might be undertaken by students from an appropriate university under the supervision of OHV staff. (See Section 3.1.4, Further Assistance)

The Overall Objective of Stage 1 can also be facilitated through a number of wildlife enhancement strategies, as follows:

3.1.2 Wildlife Feeding

Much of the existing fauna/mammals, birds and reptiles could be attracted to local feeding and watering stations, particularly around the OHV homestead and cottages. This could include:

a) Mammals - Macropods

Some macropod species are already commonly seen both around the OHV buildings and on the other parts of the property (e.g. whiptail wallabies (*Macropus parryi*) and red-necked wallabies (*Macropus rufogriseus*). However most of these animals are timid and cannot be approached closely. In order to improve their availability and proximity to visitors it is **recommended** that a programme of supplementary feeding for macropods be introduced. This should include:

- Provision of kangaroo pellets at various sites around the OHV buildings. These pellets are used for hand feeding macropods at Lone Pine Sanctuary, and are manufactured and supplied by Lockyer Lucerne Products Pty. Ltd. Relevant details including price and composition, are given in Attachment 2.
- Provision of other supplementary food such as hay at the macropod viewing sites identified in the mammal survey previously discussed.

It should be noted that artificially feeding free-range macropods is a controversial procedure (see key reference Higginbottom *et al*, 2000). Proponents of feeding say that the strong satisfaction that visitors get from the experience, especially if coupled with appropriate interpretation, justifies the intrusion, since it increases their support for conservation. Those who disapprove of feeding argue that it may have

detrimental effects on individual health, disrupt natural populations and even other species in the community, and sends the wrong sort of messages in encouraging people to think of wild animals as being for human use.

If artificial feeding does occur, there are several well-established practices that should be applied. The diet should be designed to mimic that in the wild. Fresh, clean water should be available at all times and most rations fed ad lib. Where hay is offered, it should not be too stalky as this may predispose to necrobacillosis (Blyde, 1999). Similarly, too much bread can cause poor gum hygiene, while commercial cat and dog food preparations should be avoided as they may induce Vitamin D toxicity. Feed is usually provided above the ground to avoid contamination from animals treading and defaecating in it, the equipment used is cleaned regularly, and the areas of very high kangaroo use are raked daily to remove faeces and waste feed (Blyde, 1994).

Interestingly, the commonly occurring situation where kangaroos graze on introduced pastures or lawns, thus making them more amenable to tourism, is rarely viewed in the same light as the more direct forms of artificial feeding above. This is probably because many people do not perceive these pastures as "un-natural", and also because the effects are likely to have been in place for a longer period of time and local populations have adjusted to the artificial situation.

It is **recommended** that specific grassed areas around OHV are watered to ensure a continuous green pick to attract macropods to the cottages and restaurant.

- Possums

Near the OHV buildings, possums (particularly common brushtailed possums, *Trichosurus vulpecula*), can be attracted to feeding platforms attached or suspended from surrounding trees. They will eat a wide range of foods particularly fruit. However it should be noted that possums will also take advantage of broken tiles, loose sheets of iron or unfinished work to shelter in ceilings or roofs. The Information Sheet "Brushtail Possum" included in Attachment 2 given more details of possum management.

- Bandicoots

The northern brown bandicoot (*Isoodon macrowus*) and the long-nosed bandicoot (*Parameles nasuta*) are already commonly seen around the OHV buildings. They are primarily insectivores and may cause a seasonal problem by digging small holes in the homestead lawn while searching for insect larvae.

These species too can be encouraged to be more available and accessible to tourists by providing suitable supplementary food (e.g. meal worms) in appropriate sites.

The lawn problem can be overcome by spraying the affected area with an insecticide when the bandicoots start their digging. More information is given in the Bandicoot Information Sheet included in Attachment 2

- Gliders

Sugar gliders (*Petaurus breviceps*), squirrel gliders (*Petaurus norpolcensis*) and greater gliders (*Petauroides volans*) may also be attracted to feeding stations erected in appropriate trees. Possible sites can also be identified from the native mammal survey.

b) Birds

Many **small birds** can already be found in the gardens around the OHV buildings. However, in order to encourage more birds to the site and to increase their visibility to the visitors, it is **recommended** that at the earliest practicable time, feeding stations be established for small birds in the most dense available vegetation. Good sites should also be identified in the bird survey, but would include near water, around the proposed picnic areas (such as at Dinner Camp) and around the OHV swimming pool. Dense vegetation is desirable because small birds feeding in numbers in the open attract birds of prey. Consequently, provision of feeding stations should ideally be done in conjunction with the planting of more native vegetation (see Section 3.1.3).

Many **birds of prey** have been identified in the area, and they could become an important and conspicuous component of the OHV fauna. Some of these species, including wedge-tailed eagles (*Aquila andase*), little eagle (*Hieraactus morphroides*), whistling kite (*Haliastur sphenivus*) and black-shouldered kite (*Elanus axillaris*) often eat carrion and can be trained to come to feeding stations.

It would be a good thing to maintain and make relatively tame the local population of these spectacular birds by providing carrion (carcase off cuts are recommended) on strategically located feeding platforms near known nests of these species at OHV, particularly during spring and summer when they are nesting and raising young (and are most hungry).

In making this recommendation, caution needs to be taken to avoid the raptor population being increased to a point where the raptors become human dependent. Therefore supplementary feeding should be utilised as a supplementary source of food and, particularly, as a means of encouraging the birds to remain in the area.

Water birds can also be encouraged to become a greater visitor attraction by the provision of appropriate food at visitor viewing sites. One such site could be adjacent to the large OHV dam.

3.1.3 Habitat Enhancement

In conjunction with providing supplementary feed, wildlife can also be attracted into specialised enhanced habitats to maximize the opportunities for viewing the species at close quarters and at appropriate times of the day (particularly around dusk and in the early morning).

Habitat enhancement can take two forms, planting for wildlife, and installing next boxes.

a) **Planting for Wildlife** – Many species of native fauna can be attracted to plantings of appropriate native vegetation. This is particularly so for birds who will feed and nest in the new foliage, but also applies to mammals and reptiles. For instance, where appropriate, grevilleas, bottle brushes (*Callistemon* species), banksias, and smaller flowering eucalypts encourage nectar and pollen eaters such as lorikeets, honeyeaters, and some possums. Teatrees (*Melaleuca* species) lillypillies (*Acmena* and *Syzigium* species), and many eucalypts will attract a large variety of animals. Grasses and seed-bearing trees such as she oaks (*Casuarina* species) attract finches and seed-eating parrots. Possums, fruit bats, and some birds are attracted to ripe fruit.

It is **recommended** that native vegetation to attract wildlife is established in areas of OHV which have been identified as wildlife viewing sites. These will include the gardens around the OHV buildings, around the permanent water sources, and along the visitor walking and riding trails.

Specific information about these native plant species and the wildlife they will attract can be found in Attachment 2. The articles "How to Attract Native Birds to Your Garden" and "Planting for Wildlife" should be particularly useful.

The planting of this native vegetation should, of course, be done as part of the overall vegetation management plan for the property (See Section 3.4).

b) **Installing Nest Boxes** - For many native animals (mammals and birds), dead trees with their hollow nesting sites are more important than living trees. The loss of hollows is a huge loss for wildlife, and much of OHV has been logged and now retains only relatively young regrowth. It is estimated that it takes 100 to 250 years to form significant hollows in native eucalypt trees.

It is **recommended** that nest boxes for a range of native species be installed in and around the various wildlife viewing sites on OHV.

Details of nest box design and installation for a range of native species can be found in the article "Operation Nest box" in Attachment 2.

3.1.4 Further Assistance

More information and assistance with the various aspects of managing the existing wildlife can be obtained from:

1) Mr. Andrew Tribe — Senior Lecturer in Wildlife, School of Animal Studies, The University of Queensland Gatton. Phone 07 5460 1261 Fax 07 3365 5677. email a.tribe@mailbox.uq.edu.au

2) Dr. Karen Higginbottom — Coordinator for Wildlife Tourism, CRC for Sustainable Tourism, Griffith University, Gold Coast. Phone 07 5594 8059. Fax 07 5594 8067.

2) Queensland Parks and Wildlife Service

Ms Kay Kelly — Wildlife Manager South-east Region, Priors Pocket Road, Moggill. Phone 07 32020200

Specific assistance about assistance in conducting a fauna survey of OHV can be obtained from:

1) Dr. Luke Leung — Lecturer in Wildlife Technology, School of Animal Studies, The University of Queensland Gatton. Phone 05 5460 1264.

2) Wildnet

Ms Noelene Kunst — Principal Conservation Officer (Wildnet) Planning and Research Division. Phone 07 3227 7780. 07 3227 6386 email www.env.qld.gov.au

3) Key Reference — "Wildlife of Greater Brisbane". Edited by Michelle Ryan (2000). Published by

the Queensland Museum. Available at all bookshops.

This book provides photos and information about all the species of wildlife (including invertebrates) found in the Brisbane area. As such, it will be very useful in identifying and describing most of the wildlife to be found at OHV.

3.2 Wildlife Tourism

3.2.1 Objectives

The key objectives of wildlife tourism at OHV are to enhance the experience of the visitors and so to increase the attractiveness of OHV as a tourist destination. To do this, it is important to understand what wildlife visitors want and expect out of their wildlife experiences.

The key reference "Evaluation of organised tourism involving wild kangaroos" (Higginbottom *et al*, 2000) discusses in detail the key features of kangaroo tourism in Australia, identifies weaknesses and describes elements of current best practice. Some of its findings and recommendations have relevance to wildlife tourism at OHV. For instance in a survey of 183 visitors to kangaroo related tourism enterprises, 50% claimed that opportunities to view wildlife were a part of their travel destinations, while 26% said that viewing wildlife was the **major** factor in making travel decisions.

The survey also included a question that asked visitors to rate the importance of various features of their wildlife experiences. This question was designed to examine

the expectations or motivations of visitors. Table 1 lists 15 features (which were derived from previous studies of wildlife tourists) and the percentage of the sample rating the feature as very important. The most important features were those relating to the naturalness of the experience and the provision of information. Other features such as large numbers of wildlife and the opportunity to feed/touch wildlife had low ratings of importance. This table also includes comparable results from other Australian studies.

Table 1. Importance of Features of Wildlife Experiences

Feature	% Present Sample	% Captive setting Sample	% Flinders Chase NP Sample
Seeing wildlife behaving naturally	68%	-	72%
Seeing wildlife in a natural environment	67%	76%	74%
Knowledgeable guides/staff are available	66%	72%	44%
Interesting information about the wildlife	55%	50%	44%
Unique/unusual wildlife	55%	37%	54%
Being able to get close to the wildlife	48%	50%	51%
A natural environment with little evidence of humans	45%	-	47%
Feeling safe	43%	53%	42%
Pleasant environment	42%	63%	46%
Visitor numbers are limited	37%	-	30%
Seeing rare/endangered species	37%	40%	49%
Large variety of wildlife	35%	35%	39%
Wildlife are easy to see	32%	56%	39%
Large numbers of wildlife to see	30%	28%	33%
Being able to touch or feed the wildlife	14%	17%	13%

(Source: Higginbottom *et al*, 2000).

These findings are supported by the work of Dr. Phillip Pearce, Professor of Tourism at James Cook University, who claims that wildlife tourists believe that they have got

value for money when they not only get to see the animals but also feel that they have gained an insight into their behaviour, ecology and environment. However, he stresses that typical wildlife tourists do not generally want very much information. They will not read detailed material nor expect "David Attenborough" type presentations while on holiday.

Higginbottom *et al* (2000) recommended best practice guidelines for kangaroo tourism enterprises on the basis of their study. They have relevance to the establishment of wildlife tourism at OHV, and so are summarised here in Table 2.

Table 2. Best practice guidelines for kangaroo tourism

The following is a summary of best practice guidelines recommended for kangaroo tourism enterprises.

Business management

- Use a documented business plan as an integral part of their management system; this need not be a complex or expensive process.
- Conduct ongoing market research and integrate that into planning; again this can be done in relatively simple and inexpensive ways.
- Undertake effective risk management practices.
- Develop effective teamwork within your organisation to cover the range of skills required for high quality kangaroo tourism.
- Build strong relationships with other groups with an interest in nature-based tourism, such as protected area staff and regional or local tourism associations.
- Work to build positive relationships with local competitors.

Kangaroo interpretation

- Develop an integrated interpretive program following established best practice principles for interpretation
- Integrate your interpretation with your marketing

- Interpretation should address a range of issues relating to kangaroo natural history and management, as well as minimal impact guidelines.

Planning and managing kangaroo encounters

- Provide as natural an experience for the visitors as possible.
- Avoid handfeeding or handling of kangaroos living in natural areas.
- Maximise your visitors' satisfaction with kangaroo encounters by developing better techniques for finding and getting close to kangaroos, and using interpretation to make visitor expectations more realistic.
- Do research on your local kangaroo species and populations.
- Find out what technology is available to assist you in providing satisfying kangaroo encounters and learn to use it properly.
- Plan for flexibility in your tours and do what you can to adjust the tour to your guests' interests.
- Take steps to habituate the kangaroos without use of food or other rewards.
- A good principle for minimising disturbance to kangaroos as well as providing satisfying visitor experiences is that you should not cause them to hop away.
- Contribute to the conservation of your local area and wildlife; use this in your promotion and where possible involve your visitors.
- Build positive relationships with wildlife researchers and protected area managers working in the area based on mutual benefits.
- In providing an interesting kangaroo experience for visitors, it is not only the kangaroos themselves that may be of interest, but also their signs.
- Remind your guests to drive slowly and keep their eyes open for wildlife, especially in the dusk and dark.
- Encourage visitors to use zoom or telephoto lens on their cameras so they do not need to approach closely for photography.

Environmental management

- Adopt published guidelines for best practice environmental management for nature-based tourism operators; use this in your marketing.
- On walking tours, keep your visitors on the track
- While in road transport, avoid driving off road in areas of natural habitat.
- In your interpretation, tell your guests about the importance of habitat for kangaroos and other animals.
- Where feasible, get involved in habitat restoration and protection. Integrate this into your presentation.

- Seek advice from managers of natural areas you are using on how best to reduce environmental impacts.
- Use a relatively small group size.

3.2.2 Wildlife Tourism Activities

The OHV property has a broad range of native wildlife species. Some of these will be readily seen (such as the grey kangaroos, whiptail wallabies and many bird species), while others will be either much less common, more timid or nocturnal (such as brush-tailed rock wallabies, gliders, bandicoots etc.). A number of activities could be organised relatively quickly and inexpensively based around this existing wildlife, where visitors could be guaranteed to see at least the common species. These could include:

a) Self-Guided Activities

These would involve the OHV guests availing themselves of the opportunity to view and interact with the wildlife they find themselves. This could be:

- Around the OHV homestead
- On walks, rides or drives around the property
- Feeding local wildlife such as kangaroos and birds.

The advantages of such activities are that they allow visitors the freedom to do what they want when they want when they want, once set up, are inexpensive to run. However to be successful, they do require careful planning, and the provision of

simple, accurate information to allow visitors to identify and find out about the wild animals they are observing. Binoculars should be made available to guests.

Consequently, developing the self-guided activities will rely upon both the OHV fauna survey (to find out what wildlife is where) and the provision of appropriate wildlife information (signs, small brochures, pictures etc.). This is discussed more in Section 3.2.3.

It is **recommended** that self-guided wildlife activities be planned in conjunction with the fauna survey, and that interpretive materials be developed to complement these activities.

b) **Guided Activities**

It is likely that most visitors will appreciate the opportunity of viewing and interacting with wildlife as part of a guided activity. This could be:

- Around the OHV homestead
- On walks, rides or drives around the property
- Evening talks to OHV guests both formal and informal

These activities can made visitors feel they have gained a better understanding and insight into the wildlife and its interaction with the local environment. However, guided activities are obviously more expensive to run, and therefore should not be offered too frequently.

It is **recommended** that a "wildlife guide" be appointed to the OHV staff, but that guiding be only a small part of this person's overall duties.

It is also **recommended** that all staff at OHV who interact with the public be trained to become familiar with the local wildlife, so that they too can contribute to the visitors' appreciation of them.

c) Self-Catered Safari Huts

OHV is large enough for self-catered safari huts to be constructed well away from the OHV homestead, from which visitors can see wildlife close at hand and in a natural environment.

The number and siting of these huts will also be dependent on the initial OHV wildlife survey. They should be constructed in scenic locations, where wildlife, particularly macropods and birds, can readily be seen, and preferably close to a water source.

d) Wildlife Weekends

One way of developing Old Hidden Vale as a wildlife tourism destination would be to promote "wildlife weekends". Here, in addition to the usual wildlife activities, a number of short, informative wildlife talks and presentations would be offered followed up with guided walks and "workshops" which would provide visitors with a better insight into the local wildlife.

These weekends could focus on a particular theme (e.g. birds of prey, macropods, aquatic birds etc.) or just cover wildlife in general.

They could feature a "wildlife host" – a wildlife expert who would lead the tours, give talks and stimulate interest and discussion amongst the group.

3.2.3 Wildlife Information

The wildlife tourism activities will need to be complemented by appropriate, informative, entertaining and accurate wildlife information. This should not only tell visitors about the animals they may see, but address a range of issues relating to wildlife natural history and management, as well as minimal impact guidelines.

This material could include:

a) **Printed Information**

Signs, brochures, pictures and books should be made available to visitors both at the OHV homestead, and at other wildlife viewing sites.

b) **Information Technology**

Videos, video cameras and other technology may also assist in allowing visitors to get close to and appreciate the wildlife.

c) **Trained Staff**

As discussed in Section 3.2.2 b), all the OHV staff who interact with the visitors should be knowledgeable of the local wildlife and so be able to discuss it with the guests.

It is **recommended** that advice regarding the development of OHV wildlife information be sought from the CRC for Sustainable Tourism. This institution is based at Griffith University on the Gold Coast, and has a Wildlife Tourism section. The co-ordinator is Dr. Karen Higginbottom (main author of the key reference about kangaroo tourism). Her advice would be valuable for two reasons. Firstly she has had considerable experience in evaluating other wildlife tourism operations and the interpretive material they provide to their visitors, Secondly, she can arrange evaluation of OHV wildlife information including its effectiveness and interest for visitors.

3.2.4 Further Information

More information and assistance with the various aspects of Wildlife Tourism at OHV can be obtained from

1) Mr. Andrew Tribe (details on 3.1.4 page)

2) Dr. Karen Higginbottom (details on 3.1.4. page).

3.3 Vertebrate Pest Management

3.3.1 Objectives

The most important introduced species in terms of this project are the introduced predators (foxes and feral cats). Hares are also common in the area, although their impact is uncertain.

There is abundant and growing evidence that small groups of critical weight range mammals simply cannot survive in a habitat with established populations of foxes and cats. Foxes and cats are also efficient predators of some ground-nesting birds and foxes will indulge in surplus killing. Recently, a group of some 20 captive Rufous Hare-wallaby (*or Mala*) (*Lagorchestes hirsutis),* were reportedly killed by a fox in three nights near Alice Springs.

Because of the extreme susceptibility of critical weight range (CRW) mammals to fox and cat predation, any release of such mammals into areas unprotected by predator-proof fences must be preceded by a well planned intensive fox and feral cat control program. While well-proven, effective, techniques for fox population control are available for use in large areas, this is not the case yet for feral cats.

At this stage, there should be no attempt to reintroduce endangered critical weight range fauna into areas that are not protected by predator-proof fending. Where predator control has not been fully effective, attempted reintroductions of CRW mammals in Australia have almost always failed (e.g. Cristensen and Burrows 1994; Copley 1994; Gibson *et al*; Short *et al* 1992, 1994).

Even with protection of a "sanctuary" area by good electric fencing, it is necessary to remove all predators from with the sanctuary and to maintain a predator control program around its perimeter.

The objective of vertebrate pest management for Stage 1 is to significantly reduce the populations of foxes and cats on OHV and then to continue a predator control program to maintain low populations of these predators.

3.3.2 European Fox (Vulpes vulpes)

a) **Biology and Ecology** – Common in all habitats throughout the region, this species is a major threat to Critical Weight Range mammals and must be effectively controlled.

Foxes are territorial with home ranges in arid Australia likely to exceed 500ha. Vixens come into oestrus only once per year. In south-eastern Australia, most mating is in autumn-winter with most cubs being born in August-September. Mena litter size is four. Young foxes disperse from the parental range and have been observed to travel long distances (up to 120km). Analyses soft stomach contents from foxes shot in Kinchega National Park over the past twenty five years have revealed that food was almost entirely rabbit, with some fruits and seeds and a small proportion of scorpions, centipedes, locusts and beetles. At OHV, it is likely that they are mainly eating hares and native vertebrates. With a decline in fox abundance, cats are likely to increase in abundance. This is because foxes appear to suppress feral

cat populations and dingoes tend to suppress fox populations. After control in the Gibson Desert Nature Reserve, Christensen and Burrows (1994) found that cats became important predators of released burrowing bettong and golden bandicoot.

b) **Broad Area Fox Control** - A copy of a recent Bureau of Resource Sciences manual on foxes and their control (Saunders, Coman, Kinnear and Braysher 1995) is in Attachment 3.

Strychnine, Compound 1080 (sodium monofluoroacetate) and cyanide are all useful poisons for foxes. Only compound 1080 is in normal legal use, and that use is tightly regulated. Foxes are particularly susceptible to 1080 and will readily take baits of meat, lard, condensed milk and commercially prepared 1080 poisoned bait marketed as "Foxoff".

Fox populations can be dramatically reduced by a poisoning program using dried meat baits (approximately 60g with 4.5mg of 1080) or commercial fox baits ("Foxoff") at 5-10 baits km^2 supported by den fumigation and spotlight shooting. Highest bait densities should be used along roads, drainage lines and around claypans where predator densities tend to be highest. These baits should also control feral dogs and dingoes at OHV.

Young foxes dispersing from the home ranges of their parents will invade an area where a control program has reduced fox population density. In south-west Western

Australia, mean dispersal of seven juvenile male foxes was 43km and that of six females was 15km. Because of this, any unfenced site for release of native fauna should be as large as practicable. Baiting will need to be repeated for several occasions in order to achieve control.

Control programs around the birth of litters (August-September) and January-February when the juveniles are dispersing are the most effective in controlling fox populations.

It is **recommended** that a long term predator management and monitoring programme be implemented at OHV. Input should be sought from the author of this report and the Queensland Department of Natural Resources.

3.3.3 Feral Cat (*Felis catus*)

a) **Biology and Ecology** - The biology and ecology of feral cats in Australia has been studied less than that of foxes. There is growing evidence that cats were introduced into Australia long before European settlement. They are widely distributed and occupy habitats ranging from deserts to rain forests.

Pregnant females tend to be most common in October-November, indicating spring breeding. However, in eastern Australia, females reach sexual maturity at 10-12 months of age and generally give birth to two litters per year (in spring and in summer-early autumn). Litter size averages about five. Frequency of breeding, age at puberty and kittens weaned per litter is likely to reflect food availability.

Feral cats are strictly carnivores and prefer to feed on live prey. Analyses of stomach contents from cats shot in various habitats in the Broken Hill area revealed few native mammal remains. Food was mainly rabbit, with smaller amount of reptiles, birds, scorpions, centipedes, locusts and house mice. As with foxes, cats at OHV are likely to be more dependent on hares and native vertebrates.

While foxes are spatially territorial, and cats do have home ranges, it appears that there is also a time-specific (or temporal) territoriality in that while one cat is hunting in an area, others tend to avoid it. Cats have been found to travel distances in excess of 50kn between captures. There are however, few data on dispersal patterns.

Mean dispersal distances of feral cats are not available. This species is not spatially territorial as are foxes, but individual animals have been observed to move in excess of 50km.

b) **Broad Area Cat Control** - While cats are very susceptible to poisons in common use for vertebrate pest control, they are more difficult than foxes to poison or trap because they are reluctant to take baits. There is a commercial 1080 poisoned bait known as "Pussoff" and the vertebrate pest control authorities in Western Australia have a new bait for cats which is claimed to be more effective than alternatives. Details of that bait are available from the W.A. Department of Conservation and Land Management (WACaLM).

While cats are difficult to control, they have been eliminated from a number of offshore islands using conventional control techniques. Barrier fencing has proved to be the most effective tool available.

A manual of feral cat control should be available from the Bureau of Resource Science. The address of the Bureau is PO Box E11, Queen Victoria Terrace, Parkes, ACT 2600.

Until that manual is available spotlight shooting is recommended as a useful if limited technique for cat control for the time being.

A copy of the brochure "Cats in Australia" produced by Australian National Parks and Wildlife Service (1993) is included in Attachment 3.

3.3.4 Further Assistance

More information and assistance with the various aspects of Vertebrate Pest Control can be obtained from:

1) Mr. Andrew Tribe (see details on 3.1.4)

2) Ipswich City Council

   Mr. Peter Copping - Conservation Officer

   Phone 07 3810 6608 or 07 3810 6610 Fax 07 3810 6206

3) Queensland Parks and Wildlife Service

   Ms Kay Kelly – Wildlife Manager, South-east Region. Phone 07 3202 0200.

3.4 Vegetation Management

3.4.1 Objectives

Vegetation management is integral to land use and environmental change. According to Boulter *et al* (2000), it can help to:

- Secure the long-term viability of a property.
- Protect biodiversity and prevent soil erosion and salinity.
- Protect catchments and keep them healthy.
- Control pests.
- Provide production values such as shade and shelter.

The most appropriate configuration and combination of vegetation will obviously depend on the planned land use. At OHV, the objectives of vegetation management must therefore be to:

- Provide suitable habitats for local wildlife.
- Facilitate the viewing of wildlife by OHV visitors.
- Allow for the continuation and development of the existing beef cattle operation.

To satisfy each of these objectives it is **recommended** that the vegetation management should be integrated and this requires the development of a Property

Vegetation Management Plan (PVMP). This plan will analyse and detail the vegetation needs and actions over the whole property, and in particular will focus on three activities:

1. Native Vegetation
2. Regrowth
3. Weeds

3.4.2 Native Vegetation

7. **Retained Vegetation**

The areas of native vegetation will provide the main habitats for the wildlife. It is vital, therefore, that substantial areas of native vegetation are not only retained, but are retained in areas of the OHV property where wildlife are most likely to occur and where the visitors will be able to observe them. Defining these areas will depend to a large extent upon the fauna survey – identifying what wildlife currently exists, where it lives, and where it can best be seen.

In addition, it is important to consider the vegetation in terms of the movement of wildlife through out the property. For instance, where they go to feed, find water or shelter. It is important too that retained native vegetation is linked together so that wildlife can move along these "corridors" to different parts of the property. Corridors will considerably increase the effective population size of each species by allowing disjointed or unconnected groups to interbreed.

Retained vegetation can be in the form of clumps or strips. Clumps are more effective in that a greater population of the total retained area is natural (minimal edge effect) compared with strips. The wider the strip, the larger the natural habitat area for the same reserved area. Clumps must be large enough to support a viable population of wildlife, but should still be joined to other native vegetation areas to allow movement between major reserved areas. Boulter *et al* (2000) advocate diversifying the vegetation structure (i.e. a combination of strips, clumps and patches) to allow greater resilience to disturbances.

For certain key areas of native vegetation, it is **recommended** that the cattle be fenced out to prevent them from destroying the more fragile understorey of shrubs and bushes and the natural regrowth of young native plants.

b) Replanting Vegetation

In some areas, replanting of native vegetation will be needed. In these areas local native plants are preferable. As Steve Fox (2000) of the Lockyer Catchment Centre points out, this is because:

- They have evolved to suit the conditions
- The local wildlife have evolved to live with local plants
- They will not become environmental weeds.

Information about native plants local to the OHV area and suitable for revegetation on ironbark/spotted gum soils is given in the paper "Improving Your Lifestyle and Area Through Native Vegetation". By Steve Fox. It is included in Attachment 4.

- **Riparian Vegetation**

This is the vegetation which is adjacent to streams, creeks and dams. It is of particular importance because it performs a range of functions (Boulter *et al*, 2000):

- Stabilising banks against erosion.
- Reducing delivery of sediment, nutrients and other pollutants to streams.
- Controlling plants growth in water courses.
- Providing terrestrial habitat and wildlife corridors.
- Providing aquatic food and habitat.
- Dissipating the flow energy and reaerating the water.

As Boulter *et al* (2000) conclude "riparian lands for wildlife should be regarded as ecological arteries of the Australian continent".

At OHV, it is **recommended** that the PVMP consider the retention and development of riparian vegetation as a priority. More information about its benefits, dimensions and management can be found in the key reference "Native Vegetation Management in Queensland" by Boulter *et al* (2000) in Attachment 4).

3.4.3 Regrowth

Within the sort of eucalypt communities found at OHV, a common method of controlling regrowth is to kill individual trees with stem injection of a pictoran-based aboricide (such as Tordon TCH). This allows for selective treatment and retention of desirable trees or for a more complete clearing of an entire area.

Such a procedure will obviously be done as part of the overall PVMP, after taking into account the areas of native vegetation that need to be retained. Part of this process should also include consideration of Stage 2 – the construction of a large predator-proof enclosure. Such an area may incorporate regrowth.

One option in managing eucalypt regrowth is to thin out an existing stand, leaving a savannah landscape. This has aesthetic appeal and does retain some shade, but as Boulter *et al* (2000) point out, in most situations savannah is undesirable. Problems may include:

- The habitat for wildlife is dramatically altered and so becomes unsuitable.
- The remaining trees are likely to have a shorter lifespan, and are more prone to insect and disease attack, and to fire damage.
- The pasture production is often lower from a savannah landscape than from an area in which the equivalent number of trees were retained in an undisturbed habitat while the complement of the area was cleared.
- The mature remaining trees are seed trees that ensure a seed source to re-establish new trees, thereby creating an inherent growth problem.

Consequently, it is **recommended** that areas of regrowth on OHV be cleared for pasture, but that this is done only as part of the rest of the PVMP.

3.4.4 Weeds

OHV contains several weed species, the major ones of which are listed in Section 2.1. Of these, Lantana (*Lantana camara*), is the most serious and widespread.

The PVMP should identify the areas where these weeds are a problem and develop an integrated strategy for controlling them. Information about the various weed species and their control can be found in the "Weed Treatment Guide" in Attachment 4, and from Section 3.4.5 (Further Assistance) below.

3.4.5 Further Assistance

There are several sources of assistance which are available to help develop and implement the various aspects of the PVMP. These include:

1) **Ipswich City Council**

- Mr. Darryl Porche – Land Far Wildlife Officer

  Phone: 07 3810 6618 Fax: 07 3810 6206

Under the Council's Land for Wildlife scheme, property owners are offered assistance in retaining native vegetation in the form of rebates for weed control and rates. The amount of rebate depends on the amount of land under conservation.

2) **Lockyer Valley Catchment Centre**

P.O. Box 61, Forest Hill.

- Mr. Andrew Davidson – Lockyer Catchment Coordinator. Phone 07 5465 4822 Fax 07 5465 4067
- Mr. Steve Fox – Tech. Officer Creek & Roadside Conservation. Phone 07 5465 4355 Fax 07 5465 4067.

More information about the Centre is in Attachment 4.

3) **Department of Natural Resources**

Vegetation Management Group

Website: www.dnr.qld.gov.au

- Ms Judith Westrup – Community Education & Extension Phone 07 3896 9748
- Ms Mary Jane Veld – Policy Officer

Phone 07 3224 2053

4. LEGAL REQUIREMENTS

All birds, mammals, reptiles and amphibians which are indigenous to Australia belong to the Crown and are subject to the Nature Conservation Regulation, 1994.

However, this regulation applies to captive wildlife, and Stage 1 involves free range wildlife only. Consequently, at this stage there are no legal requirements concerning the wildlife at OHV.

However, this will not be the case for Stage 2, where a predator-proof fence and reintroduction of endangered local wildlife may be construed as being a captive situation.

Further advice about this can be sought from Queensland Parks and Wildlife Service, Phone 07 3202 0200.

5. STAFFING REQUIREMENTS

5.1 Objectives

The development and implementation of Stage 1 will require the following staffing initiatives at OHV:

1) Employment of a Wildlife Development Officer

2) Training of existing staff.

5.2 Wildlife Development Officer

As previously discussed, it is proposed that OHV will recruit a new staff member whose main responsibility will be the implementation of the recommendations of this plan. As such this person should have the following selection criteria:

- Thorough knowledge of Australian wildlife
- Understanding of wildlife conservation
- Experience with methods of weed and vertebrate pest control.
- Understanding of wildlife tourism.
- Ability to initiate wildlife conservation initiatives.
- Ability to communicate well with OHV visitors.

In addition, it is understood that this person may also be required to assist with other farm work at OHV, particularly with the beef cattle operation.

Other skills would also be an advantage including horse riding and computer proficiency.

Finding a person with this range of skills will not be easy. They will need a tertiary qualification in a wildlife/ecology discipline, with additional practical experience with animals and wildlife tourism.

In seeking such a person, the following people may be of assistance:

1. Dr. Luke Leung – Lecturer in Wildlife Technology, School of Animal Studies, The University of Queensland Gatton. Phone 07 5460 1264.

   Dr. Leong will be able to give advice regarding possible applicants who have completed tertiary wildlife courses at Gatton Campus.

2. Dr. Karen Higginbottom – Coordinator, Wildlife Tourism, CRC for Sustainable Tourism, Griffith University, Gold Coast. Phone 07 5594 8059 Fax 07 5594 8067.

3. Mr. Kevin Bradley – President, Queensland Wildlife Parks Association, Dreamworld, Coomera. Phone 07 5588 1146. Mr. Bradley can circulate a job advertisement through the Queensland Wildlife Parks Association and give advice on potential applicants from this source.

5.3 Staff Training

As wildlife tourism at OHV develops, it is important that the existing staff are able to contribute to the overall wildlife experience of the visitors. This is particularly true of the staff who will be interacting with guests, such as in the dining room. They

should, for instance, know the common species at OHV which may be readily seen, and understand something of their ecology and behaviour.

This will require some staff training, at least in the basics of wildlife and wildlife conservation at OHV. Advice and assistance with this can also be obtained. From

1. Mr. Andrew Tribe (see previous details)
2. Dr. Karen Higginbottom (see previous details).

6. BUDGET AND PROJECT IMPLEMENTATION

The budget and implementation estimates listed below are based on:

- Employment of one full time "wildlife development officer"
- Some assistance particularly with vegetation management being provided by existing OHV farm staff
- A two year implementation period for Stage 1 recommendations.
- Some work being subcontracted to outside staff
- Existing farm equipment and machinery being available when required.

6.1 Budget Estimates

Implementation Period – Years I and II

A.	Wildlife Development Officer (@$40000/year/2years)	80000
B.	Fauna Survey (assuming some University assistance)	10000
C.	Management of Existing Wildlife	
	Wildlife feeding	5000
	Habitat enhancement	5000
D.	Wildlife Tourism	
	Wildlife tourism activities (excluding self-catered safari huts)	5000
	Wildlife tourism information	10000
E.	Vertebrate Pest Management (broad area fox/dog control)	20000
F.	Vegetation Management	
	Native vegetation	30000
	Regrowth	15000
	Weeds	20000
TOTAL EXPENDITURE YEARS I AND II		**200000**

6.2 Project Implementation

It is recommended that Stage 1 be implemented over two years. This should provide enough time for the three key recommendations to be undertaken initially, and for the other recommendations to be subsequently implemented.

6.2.1 Year I

Key Components

- Appointment of "Wildlife Development Officer"
- Commencement of Fauna Survey
- Commencement of Property Vegetation Management Plan

Subsequent Components

- Commencement of wildlife feeding strategies
- Commencement of vertebrate pest management
- Development of self-guided tourism activities
- Development of wildlife tourism information
- Commencement of regrowth and weed control.

6.2.2. Year II

- Wildlife habitat enhancement, including planting of more native vegetation
- Continuation and monitoring of vertebrate pest and weed control
- Development of guided tourism activities
- Continuation of wildlife feeding program.

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