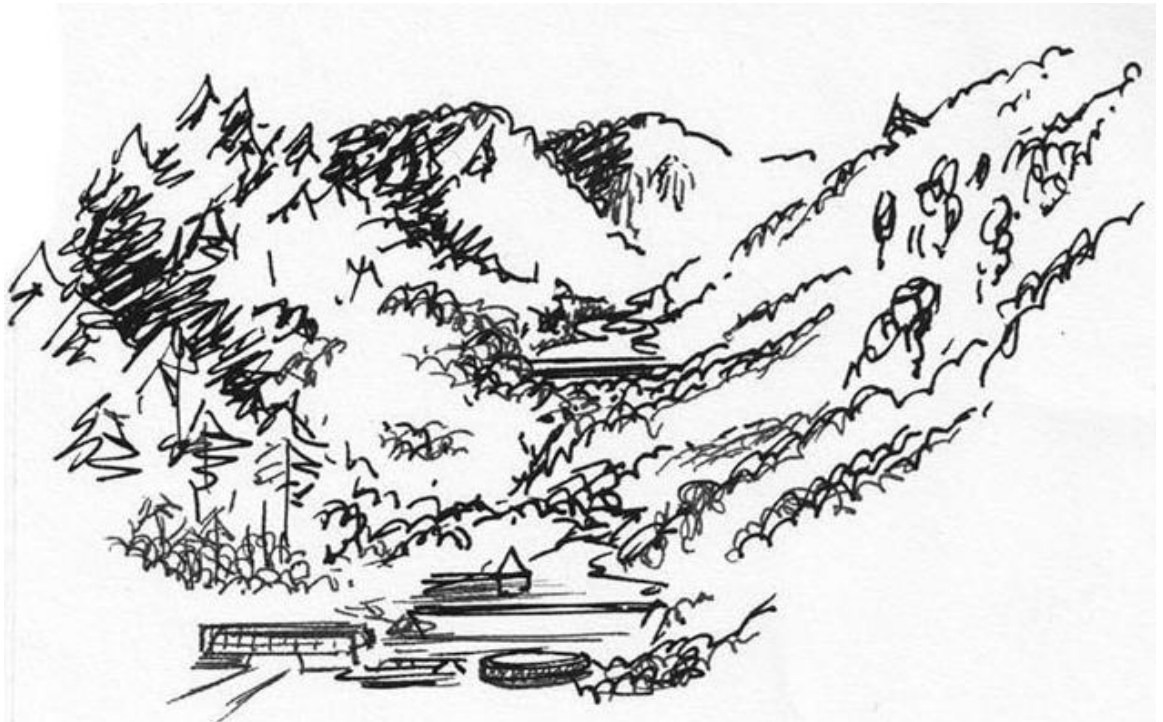


A Native Wildlife Sanctuary for Wellington City

Initial Discussion Paper - 3rd Draft



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Executive Summary

- The proposal is for a Native Wildlife Sanctuary in the old Karori Reservoir in Wellington.
- The reservoir is an area of 252 hectares of regenerating native hardwood forest, approximately 3 kilometres from the Wellington central business district. It is a natural valley with wetland potential.
- The concept is to restore the site to something close to its natural condition by:
 - fencing the entire catchment with a predator/browser proof heavy duty fence
 - eradicating and excluding all threats to the forest and native wildlife - goats, possums, cats, stoats, rats
 - establishing in the sanctuary a diverse range of plants, birds and animals.
- These will then thrive in the secure environment to a richness far greater than known elsewhere on the mainland.
- The venture has a wide range of benefits, including:

| | |
|-------------------------------------|--|
| Conservation | - Helping to improve the natural ecosystems of Wellington and bring native birds and animals back to the city. |
| People Involvement | - It should be a catalyst for community action and involvement. |
| Tourism/ Recreation/ Economic | - Up to 100,000 visitors per annum could be expected. It should be a star environmental tourist attraction for the city. |
| Cultural | - It will restore the natural taonga of the local tangata whenua. |
| Education | - It will teach New Zealanders about their natural heritage. |
| Research and Scientific | - It will materially advance our knowledge and techniques in conservation. |

- The timetable envisions:
 - Establishment/planning/etc 1993/94
 - Fence built and site cleared 1994/95
 - Site improvement and species release 1995 to 1998
 - Development as tourist/education/research centre 1998 onwards
- Estimated initial capital funding required up to \$1,000,000
- Estimated ongoing management expenses (per annum) \$300,000
- Estimated revenue potential (per annum) \$1,000,000
(from 1999 onwards)
- Funding sources may include:

| Local Government | Government | Community Grants | Corporate | Community/ Individual |
|--|---|---|--|--|
| <ul style="list-style-type: none"> • WCC • WRC | <ul style="list-style-type: none"> • DoC • Research Funds | <ul style="list-style-type: none"> • Lottery Board • Trusts • etc. | <ul style="list-style-type: none"> • Sponsorship • Donations | <ul style="list-style-type: none"> • Trust • Membership • Donations |

1. The Concept

1.1 *The Background*

- In 1991 the Wellington Branch of the Royal Forest and Bird Protection Society developed 'Natural Wellington', a long term plan to protect and enhance the natural ecosystems of Wellington city.

The mission of this plan is to:

- **Preserve and enhance the natural ecosystems of Wellington City**
- **bring the native birds back to Wellington**

1.2 *The Concept*

- The concept of this paper is for an 'island on the land'. This involves establishing a native wildlife sanctuary close to the centre of Wellington City, in the old Karori Reservoir, and restoring the site to something like its natural condition.
- The wildlife sanctuary would be similar to a zoo, but in reverse. Whereas a traditional zoo keeps birds and animals *in* - the sanctuary is intended to keep predators and competitors *out* and to provide a safe, secure and highly desirable haven for native birds and animals to breed and thereby enable them to recover their populations and spread further afield.

1.3 *The 'Island on the Land'*

- The concept of 'islands on the land' is not new. Experiments by DoC at Mapara Forest, the Chatham Islands, Moehau Peninsula and North Cape have established the viability of highly managed habitats and predator exclusion on the main land or parts of large islands.

1.4 *Habitat Restoration*

- The idea of restoring natural habitats for species preservation was, of course, born with island refuges such as Little Barrier, Kapiti, Breaksea, Tiritiri Matangi and many other islands. Perhaps the time is approaching when we can take the lessons from these experiments to raise the game a notch or two and combine these two concepts in a working model.

1.5 *The Wildlife Reserve*

- The concept of the Wildlife Reserve as a conservation/tourist attraction is well established overseas, e.g. Healesville Sanctuary, Melbourne and Slimbridge, Gloucester, UK.
- It is not so common in New Zealand. Mount Bruce and the Otorohanga Kiwi House would be the closest we have. Some off shore islands are currently being developed for this role, e.g. Tiritiri Matangi.

2. The Need

2.1 *The Past*

- Wellington was formerly (pre 1850) dominated by a mosaic of coastal, lowland, hardwood and podocarp forest. This forest would have contained extremely dense populations of all the common forest birds such as tui, bellbird, stitchbird, pigeon, kaka, kakariki, weka, saddleback, huia, kokako, kakariki, whitehead, tomtit, robin, grey warbler, fantail, etc. Stories abound of the deafening birdsong in bush areas around Wellington.
- Subsequent to settlement virtually all of this forest was cleared and native bird life collapsed. Parallel with this came the introduced predators and browsers (rats, stoats, cats, possums) who compounded the problems of the native vegetation and wildlife. New Zealand's plants and animals evolved in the absence of predators and browsers and proved virtually defenceless against them.

2.2 *The Current Situation*

- Mature native forest in Wellington now amounts to about 5 hectares, with approximately 1500 hectares of forest in various stages of regeneration.
- Much of this forest is seriously degraded and lacks diversity. It is also infested with browsers and predators.
- Wellington city currently has only 8 species of native forest birds - tui, fantail, grey warbler, wood pigeon, vagrant shining cuckoo, morepork, silvereye and kingfisher. Some of these birds are in very low numbers or in extreme danger of local extinction, e.g. tui - est. 30 pair; wood pigeon - 2 or 3 pair.
- The only really healthy bird populations seem to be the insect eaters (fantail and grey warbler) and the ubiquitous silvereye, although the tui population seems to be increasing.
- The implications for local forest regeneration if the wood pigeon disappears are considerable as tawa, karaka, hinau, kohekohe, miro and pigeonwood are solely or substantially dependant on the pigeon for their dispersal and regeneration.
- A number of birds which are relatively common in the Hutt Valley are completely absent from Wellington City (bellbird, whitehead, rifleman, tits, robins). The situation regarding lizards and insects is not clear but is thought to be equally serious.

- Native wetland birds are extremely rare and are restricted to the occasional grey duck. Wetland birds such as pukeko, bittern and crake have no suitable habitat near the city.
- There is nowhere in Wellington City that people can see native bird and animal life of any significance. The nearest are Kapiti Island (restricted access) and Mt Bruce (distant from Wellington).
- New Zealanders (including Wellingtonians) are generally unaware of their natural heritage. Many people are becoming conscious of this and are keen to learn and participate in conservation.
- Internationally New Zealand supports the recent UNCED agreement on the retention of bio-diversity. As an example of bio-diversity, Wellington city is a model of the negative. It is a biological disaster.
- Nationally there is a similar picture. Native bird life seems to be in general decline from a combination of a loss of habitat for economic development, degradation of habitat by browsing animals and weeds and direct attack by predators.

3. The Vision

^

Imagine...



- A secret valley only 2 or 3 kilometres from the central business district of the capital city. It's a large (about 250 hectares) and spectacular valley - steep sided with rugged profile. It is clothed in vigorously regenerating native hardwood forest.



- This valley is ringed by a perimeter road. On the road is a fence - a fence that is an effective barrier to all the many enemies of native wildlife - goats, possums, rats, cats and stoats.



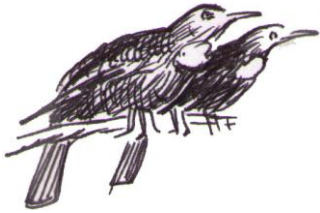
- Inside the fence the valley has been long since cleared of these nasties. The fence is maintained and patrolled and if by chance it is breached, the interlopers are caught by a series of bait stations and traps within the valley.



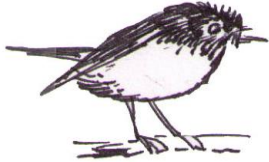
- Inside the fence the native forest - freed of the burden of browsing possums - is very dense, growing profusely and rapidly increasing in diversity and richness. Regeneration is much faster than outside the fence. Fruit and seed production is much greater. Seedlings are everywhere on the forest floor. There is far more leaf fall feeding the forest carpet of moss and ferns and generating a deep, rich humus which, in turn, is fed back to the trees. It is a healthy, vibrant eco system.

- The forest floor, sub canopy and canopy teems with insect and invertebrate life - fed by the healthy forest and without the burden of foraging rats and mice to support. Prehistoric oddities such as the giant weta and *Peripatus* can be found. Skinks and geckos scurry around.





- But, the most noticeable difference in this forest to the visitor is the bird life. Not here the morbid silence of the typical modern day New Zealand native forest. Like the forests of old, this forest rings with the melodious whistles and coughs of the tui, the beautiful chimes of the bellbird and the shrieks of the weka, kaka and kakariki. The swishing flight of the kereru can be easily heard. Noisy flocks of whitehead and silvereye pass into view. The trill of the grey warbler and the squeak of the fantail are always in earshot. At night can be heard the eerie call of the morepork and the shrill whistle of the kiwi.



- And the birds can easily be seen. The robin comes down to investigate the visitor, the pigeons sit on the branches in clear view, the tomtits flit through the forest sub canopy. Yes, is that a saddleback noisily turning over the leaf litter? Is that a kaka prising grubs from a rotten tree trunk? And down on the surface of the old dam ducks and pukekos squawk and jostle each other for space. The water is alive with wildfowl.



- But, this is also a place for people. At the bottom of the valley buses and cars pull into the Visitor's Centre by the dozen. There are locals and visitors - both out of town and from overseas. There are families and school parties - all excitedly waiting to get in and sample their natural heritage.



- They go through the Visitor's Centre where they learn about the valley and its geological and human history, its recent past and it's other role as a water supply area for the city. They then pass the lake on their way to the valley.



- First there is time for a visit to the distant past. They go through the 'Primeval New Zealand' display. Here they see the many sad extinctions that have blighted New Zealand's natural history. Life size and life like moa peek out from behind the tree ferns, a group of spectacular huia sit frozen in the branches of a tree, a giant Haasts eagle, the largest eagle ever known, spreads its wings ready to leap on the unsuspecting moa.



From here the visitor moves on to the 'Brink of Extinction' displays. Here they see the kakapo, the takahe, the kokako, the black stilt and others - all critically endangered New Zealand species living in spacious and natural surroundings. Next door are other displays of birds and animals that won't be seen in the valley, such as the ancient tuatara. Other displays show the place of the natural taonga in the world of the tangata whenua.



- Next they move out into the main valley. As they walk up the path they pass the honey-water stations - alive with 20 or 30 tui, bellbirds and kaka, with others waiting their turn in the trees. Weka wander out on the path to mooch for tidbits. Everywhere there is bird life. Sitting in the trees, flying overhead, hopping along the ground. The visitors delightedly recognise one bird after another.



- They climb up to the viewing platform on the old top dam. Here they look up the valley to a lake full of waterfowl. A view down the valley shows pigeon, kaka and other birds flitting across the forest canopy.



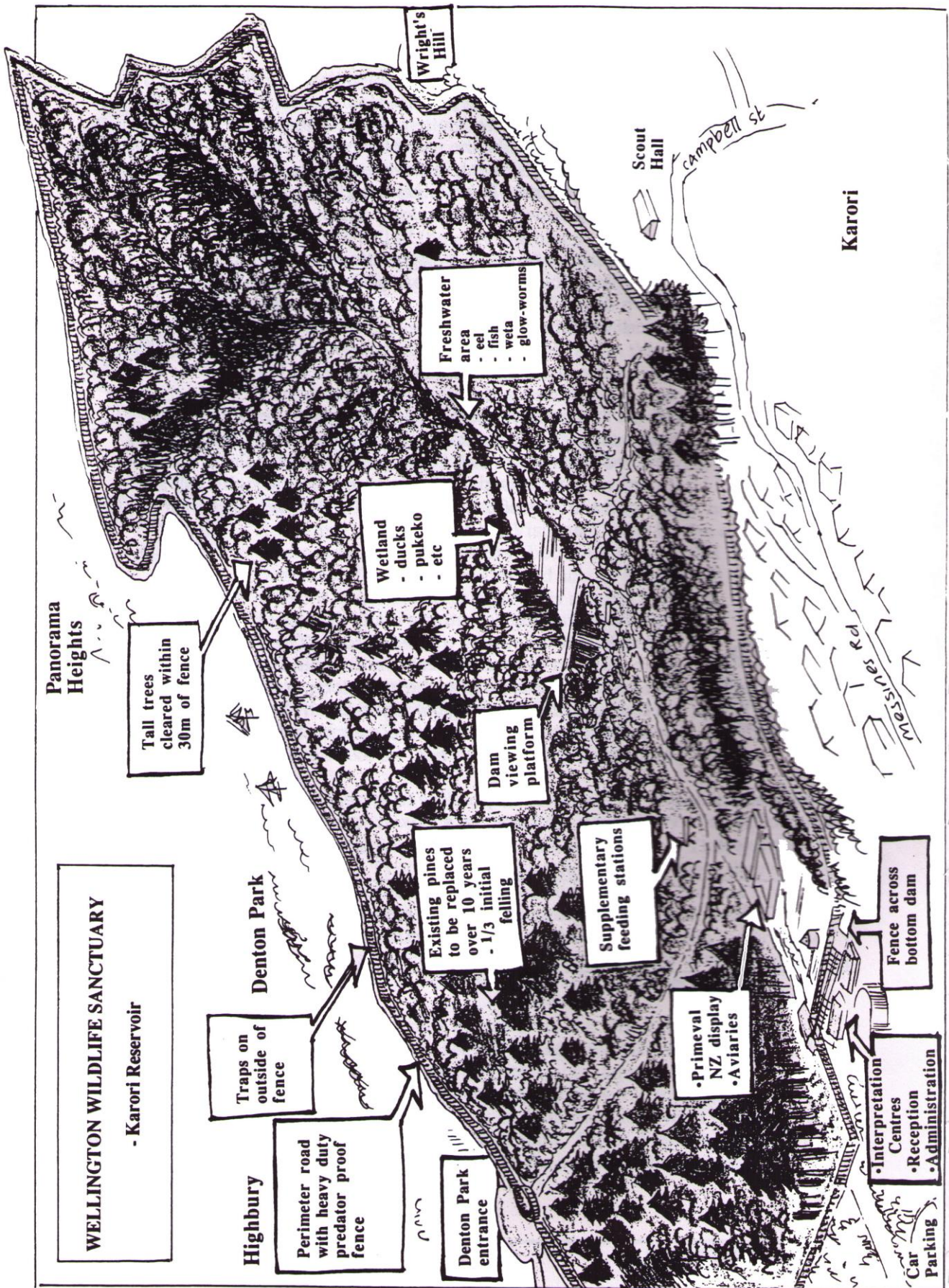
- Down to the picnic areas for a rest in the beautiful surroundings, then on to the freshwater pool to feed the eels and look for the koru and kokopu. A wander along the damp board walk reveals giant weta - an incredible sight. All along the paths are tasteful and informative interpretations for people to learn from.



- For those wanting something really different they can enrol in the special tours run by trained guides. The 'Dawn Chorus' tour - at 6 am to hear the real sound of old New Zealand - or the nocturnal tour to hear the morepork, watch the kiwi feeding in the bush and see the glow worms. All these are sights and sounds that are uniquely New Zealand and that few get to see and hear in this day and age.

Is this scene possible? We believe it is possible to establish such a unique and beautiful place in Wellington. But first, let's look at some more of the benefits of such a project.

NOTE: On the following page is a schematic view of the proposed Wildlife Sanctuary in the Karori Reservoir.



4. The Benefits

There are a wide range of potential benefits from a wildlife sanctuary. These benefits include:

- Ecological
- Educational
- Recreational
- Economic/Tourism
- Community Action and Involvement
- Scientific

4.1 *Ecological Benefits*

- The sanctuary would result in a considerable increase in native birds, both in the diversity of species and the density of bird populations, in the Wellington City environs. Native birds would breed in the sanctuary to levels where the populations were viable, then spread out through Wellington via the forest 'corridor'.
- With the consequent increase in bird populations, both the speed and extent of forest regeneration in Wellington would be increased.
- The sanctuary could be used to increase reptile and invertebrate populations in Wellington.
- It could also be used to locate small but significant populations of such critically endangered birds as saddlebacks, takahe, kokako, etc.
- Regionally rare native plants that could later be re-established in other Wellington forest areas could be raised within the sanctuary.
- A sanctuary could also be used to establish a significant wetland habitat. There is no wetland of note in Wellington City.

4.2 *The Economic/Tourism Benefits*

- Currently tourists can go right through New Zealand (including National Parks) and not see a native bird or animal of note.
- Eco-tourism is rapidly growing in popularity world-wide and the interest is projected to increase.
- Even such small and isolated sanctuaries as Nga Manu and Mt Bruce get 50,000 visitors a year.
- The Sanctuary would be an eco-tourism and environmental star attraction. It should easily attract 100,000 + visitors a year.
- Wellington currently lacks genuine attractions that people would visit the city especially to see. The Sanctuary has the potential to do this.
- The Sanctuary should directly create 20 + jobs - plus many downstream jobs in the hospitality, transport, tours sector.
- It would encourage people to stay longer in Wellington.
- It could generate a cash flow/revenue of \$1,000,000pa + in the longer term.

4.3 *The Educational Benefits*

- New Zealanders know very little about their natural history and generally do not appreciate the difficulties facing our native eco systems and wildlife.
- It is difficult for people to understand what they have lost because they have never experienced it. Young people are growing up with a world view which does not include anything from 'old New Zealand'. It is essentially a view of a foreign/exotic nature.
- The Sanctuary could be a focal point for schools and formal natural history education. It is a short bus trip from all of the city's schools and the university.
- It could also greatly increase the awareness and understanding of New Zealand's natural history amongst ordinary New Zealanders.

4.4 *Community Action and Involvement*

- The project will be a national (and international) model for community action in practical conservation and ecological restoration.
- Many people are anxious to get involved and 'do something' for the environment. They feel powerless in the face of mounting environmental problems.

- The Sanctuary would enable people to 'get involved' in a practical and achievable local conservation project of national importance.
- It is expected that the Sanctuary would generate an individual membership/subscription base from the general public of at least 7500. At an average of \$50 per subscription, this could provide an annual cash flow of up to \$375,000.
NOTE: Forest and Bird membership alone in the Wellington region is close to 10,000.
- The opportunities for community involvement with the Sanctuary are almost limitless and include, in addition to membership and subscription:
 - voluntary labour for planting, fence maintenance, species management, guided tours, etc.
 - the formation of local groups to assist in reserves management
 - representation of the Sanctuary board.
- The Sanctuary would operate on a principle of 'inclusion' rather than 'exclusion' of people. The more direct people involvement, the better.
- The sanctuary would offer a chance for meaningful business sponsorship in a highly 'visible' and popular project.

4.5 The Recreational Benefits

- The Sanctuary would add a new dimension to the recreational opportunities in Wellington, especially for families as it would provide a marvellous venue for picnicking, walking and experiencing nature within a short bus trip from downtown Wellington.
- Conservation schemes overseas indicate that a large number of repeat visits is normal. People rapidly become addicted to the genuine 'nature experience' and want more and more of it.
- It would have great benefits for the differently-abled who could be easily catered for in this project and who are effectively 'shut out' of the wilderness experience because of remoteness and mobility difficulties.

4.6 The Scientific Benefits

- The Sanctuary will materially assist the natural sciences and the advancement of our knowledge of our natural history and conservation management.
- It will provide a natural laboratory within a bus trip of one of New Zealand's major university faculties, the Department of Conservation's Head Office and many of the Crown Research agencies.

- It should provide immediate benefits by testing methodologies in areas such as:
 - predator fencing
 - predator eradication and control
 - wildlife capture and release
 - wildlife population monitoring.
- These lessons can then be applied to conservation projects in other areas.
- It has the potential to develop an international reputation.

4.7 Conclusion

- There is no doubt this is worth doing. All we need is the will, the ways and the means.
- The Wellington Branch believes the will is there. We have broad support for the 'Natural Wellington' concept. People are anxious to get actively involved in conservation. There will never be a more appropriate time and place for a project such as this.

5. The How

- Converting the concept and vision into reality is a combination of:
 - resources
 - biology
 - technology
 - and
 - management.

- Here is how we see the project evolving.

Objective

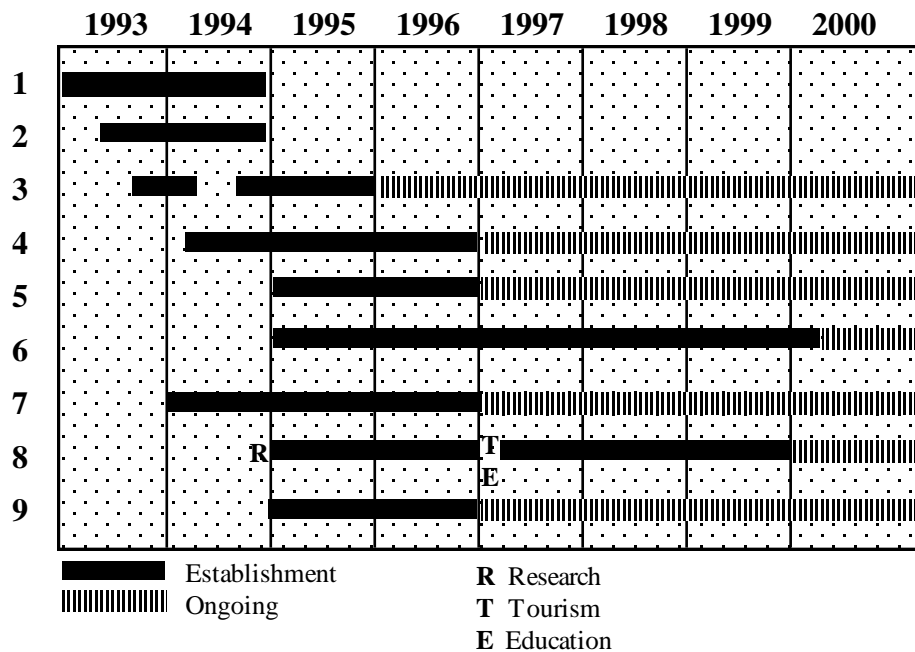
A fully operative wildlife sanctuary in Wellington City with dense populations of common native birds and animals and good populations of rare native birds and animals by the year 2000.

| | Steps | Actions/Explanation | Timing |
|----|-------------------------|---|--|
| 1. | Get Support and Funding | <ul style="list-style-type: none"> • Consult with interested parties • Develop the concept further • Get support from Councils (WCC & WRC) • Complete project plan and budget • Get sponsorships • Organise community support • Set up a trust/management structure • Raise establishment capital • Secure ongoing funding | Begin 1993 Complete 1994 |
| 2. | Obtain Use of the Site | <ul style="list-style-type: none"> • Negotiate with tenure holders • Obtain planning consents • Conduct full biological surveys • Establish research/benchmark measures • Finalise arrangements for lease/conditions of use | Begin 1993 Complete 1994 |
| 3. | Secure the Site | <ul style="list-style-type: none"> • Research/develop predator proof fence • Build a perimeter road • Fence the whole site • Clear trees within falling distance of the fence • Progressively improve and secure the fence | Begin 1993 Mid 1994 Complete 1995 Ongoing from 1995 |

| | Steps | Actions/Explanation | Timing |
|----|---|---|--|
| 4. | Clear the Site | <ul style="list-style-type: none"> • Cut access tracks on the site • Progressively control to eradicate all: <ul style="list-style-type: none"> - goats - possums - cats - stoats - rats - mice • Using: <ul style="list-style-type: none"> - bait stations - hunters - trapping programmes - tracker dogs | <p>Begin in time for 1995 breeding season</p> <p>Progressively reduce infestations year by year to aim at complete control/eradication by 2000</p> |
| 5. | Enhance the Food Supply and Habitat | <ul style="list-style-type: none"> • Survey for bird food sources/requirements • Develop a planting programme • Set up supplementary feed stations (sugar water/fruit) • Create a wetland | Begin 1995 and ongoing |
| 6. | Release Rare or Locally Extinct Species | <ul style="list-style-type: none"> • From Kapiti/Lower Hutt areas • First wave of birds: <ul style="list-style-type: none"> - tui - bellbirds - whitehead - wood pigeon - ducks - kakariki - robins - tits - weka - pukeko - rifleman - kiwi • Second wave of birds: <ul style="list-style-type: none"> - kaka - saddleback - crakes - stitchbird - fernbirds • Reptiles: <ul style="list-style-type: none"> - gecko - skinks • Invertebrates: <ul style="list-style-type: none"> - giant weta - snails - others | <p>1995/98</p> <p>1998 and ongoing when site fully secure</p> <p>1995/96</p> <p>1996 and ongoing</p> |
| 7. | Encourage Community Involvement | <ul style="list-style-type: none"> • Develop Trust membership • Organise volunteer schemes • Develop links with other community/conservation groups • Maintain the above | 1994 and ongoing |

| | Steps | Actions/Explanation | Timing |
|----|-----------------------------|---|---|
| 8. | Develop the Venture | <ul style="list-style-type: none"> Develop research facilities: <ul style="list-style-type: none"> - release aviaries - captive breeding Establish tourist/visitor facilities: <ul style="list-style-type: none"> - visitor reception - administration - Primeval NZ - Brink of Extinction - other displays - tourist 'trail' - shop - tearooms Establish education links: <ul style="list-style-type: none"> - environmental education centre - schools - university - zoo | <p>1995 and ongoing</p> <p>1997 and ongoing</p> <p>1997 and ongoing</p> |
| 9. | Manage and Improve the Site | <ul style="list-style-type: none"> Maintain perimeter integrity/control programme Continue planting/release programmes Develop tracks and facilities | Ongoing |

- Each of these steps is expanded on in the following parts of this document.
- Following is an approximate **time phasing summary**:



6. Support and Funding

- The sanctuary would be a major enterprise requiring substantial set up costs and ongoing funding.
- Initial capital costs would include:

| Item | 'Guesstimate' |
|---|---------------|
| • Initial planning, surveys, investigation and consents | \$100,000 |
| • Roads | \$200,000 |
| • Fencing | \$2,000,000 |
| • Buildings and Facilities (initial) | \$1,000,000 |
| • Browser/predator eradication | \$300,000 |

- Ongoing management, running and maintenance costs are likely to be in the order of \$1,000,000 pa. It also needs the allocation of the chosen site. Cost of the site would depend on negotiation with the tenure holders. However, while these costs may appear substantial, they are not out of the ordinary. We spend far more than that on Wellington's zoo for instance. Wellington's motor race costs the city hundreds of thousands of dollars a year for a 2 day bash!
- Wellington is a large city and has considerable potential to generate both capital and ongoing funding for an enterprise such as this. It would be a prime venture for major corporate sponsorship. It would also attract community involvement. Individuals would love to be involved directly in a scheme like this (similar to the Pukeiti Rhododendron Trust or the Wetlands and Wildfowl Trust in Britain).
- Because of the scientific value, it could almost certainly attract research funding - say for predator fencing, etc.
- With the strong environmental slant, it would easily qualify for work scheme subsidised labour, e.g. Task Force Green.
- With the educational potential, it could also qualify for other grant funding from private trusts, the Lottery Board, educational foundations, etc.

- It may even have enough appeal to attract direct government funds and should receive some City/Regional Council funding.
- These are what we see as the potential initial funding sources:

| Local Government | Government | Community Grants | Corporate | Community/ Individual |
|------------------|------------|------------------|-----------|-----------------------|
|------------------|------------|------------------|-----------|-----------------------|

- | | | | | |
|--|---|---|--|---|
| <ul style="list-style-type: none"> • WCC • WRC | <ul style="list-style-type: none"> • DoC • Research Funds | <ul style="list-style-type: none"> • Lottery Board • Trusts • etc. | <ul style="list-style-type: none"> • Sponsorship • Donations | <ul style="list-style-type: none"> • Trust Membership • Donations |
|--|---|---|--|---|

- In the longer term it has considerable revenue potential, e.g. 2000 visitors per week x \$10 per visitor x 52 weeks = \$1,040,000 pa revenue. A unique facility like this in the heart of a major city should easily generate this sort of business.
- The best management structure would probably be by way of a private community trust. Given the long term nature of the enterprise, a full time professional manager is desirable.
- To get the enterprise up and running the concept should be broadly discussed with all the interested parties and a working group formed from:
 - WCC
 - Forest and Bird
 - Ornithological Society
 - Ducks Unlimited
 - Wright's hill Society
 - WRC
 - DoC
 - Botanical Society
 - Maruia Society
 - Karori/ Aro Valley Progressive Associations, etc.
- Following this a full feasibility study should be commissioned, a management structure put in place and a funding base established.
- The board of the Trust would be comprised of representatives of the major ongoing funding sources.

Conclusion

The project is definitely financially viable. This may be the least of our problems! It would require a proper professional structure and management but this also is quite viable.

7. Obtaining the Site

- The project would hinge on obtaining the use of a suitable site - in this case, the old Karori Reservoir. A suitable site should meet the following criteria.

| Criteria | Reasons/Explanation |
|--|--|
| Centrally located in the city 'bird corridor' | <ul style="list-style-type: none"> Bird life won't be isolated. Surplus bird life can readily spread out. It will be close to any tourist market. Other near at hand forests will benefit. |
| Substantial size (100+ hectares at least) | <ul style="list-style-type: none"> To generate a sizeable pool of birds. To generate a good food supply for bird populations. To reduce the chances of initial 'flyouts' and disappearance by newly released birds. |
| A variety of native vegetation/habitats | <ul style="list-style-type: none"> So it can be immediately useable. To provide a good basic natural food supply for a variety of species. To provide a good future representative example of typical Wellington forest. The ideal is a mixed hardwood/podocarp forest ecosystem with significant wetland potential and a freshwater stream. |
| Able to be roaded and fenced around the whole perimeter and with good access | <ul style="list-style-type: none"> To enable it to be permanently secured and managed. The ideal is a natural valley with accessible ridge tops. |
| A majority of public ownership | <ul style="list-style-type: none"> To save buying chunks of expensive land. |

- The Karori Reservoir is the only site in Wellington with the potential to meet the above criteria. The Karori Reservoir site is located between Denton Park and Wright's Hill and is accessed from Waiapu St.
- It is owned by the Wellington Regional Council and has been primarily used as the Wellington water supply area. Its importance for this purpose has lessened since the opening of Te Marua lakes.

• **The Advantages and Disadvantages of the Karori Reservoir**

| Advantages | Disadvantages |
|--|---|
| <ul style="list-style-type: none"> • Top part recently vested in WCC. Remainder under WRC jurisdiction • Long history of restricted public access • A good size - almost 180 hectares • Largely roaded on perimeter already • Good access and central • Regenerating nicely • A good natural valley with areas of freshwater/wetland potential • Well located in bird corridor | <ul style="list-style-type: none"> • May still be water catchment restrictions • A lot of pines and sycamores and very few podocarps • May be awkward to road and fence parts of the Karori side of the valley |

- The Karori Reservoir is an ideal site - in fact, almost uniquely so. It would be extremely unlikely to find another site like this in the heart of a major city. it seems almost inconceivable to not take full advantage of it.
- Another site considered was Otari Native Plan Museum and Wilton bush. However this is not favoured because of the following points:
 - much smaller than Karori Reservoir (2/3 the size)
 - its current purpose is purely botanical
 - proximity of housing at Karori end
 - some desirable parts are in private ownership
 - could be difficult to road and fence some parts of it
 - no significant wetland potential
 - public may object to restricted access.
- A full biological survey should be conducted of the reservoir to establish a range of existing biological benchmarks - measures that future management can aim to improve on and measure the response to restorative management against. These can include:
 - diversity of species – plants, reptiles, birds, significant insects, predators and browsers.
 - the population densities of each of these species.

Food requirements and deficits of various species should also be established.

- The upper reservoir is now available for public use in addition to water supply. A management plan is to be prepared by the WCC early in 1993. This obviously represents the perfect opportunity at just the right time.
- The site could be retained in public ownership but leased in perpetuity to the Trust at a peppercorn rental.
- This proposal would obviously have to compete with other alternative uses for the site. However, our case is a strong one and there are few other major alternative uses.

Conclusion

There is a unique and ideally suitable site in Wellington City for this venture.

8. Securing the Site

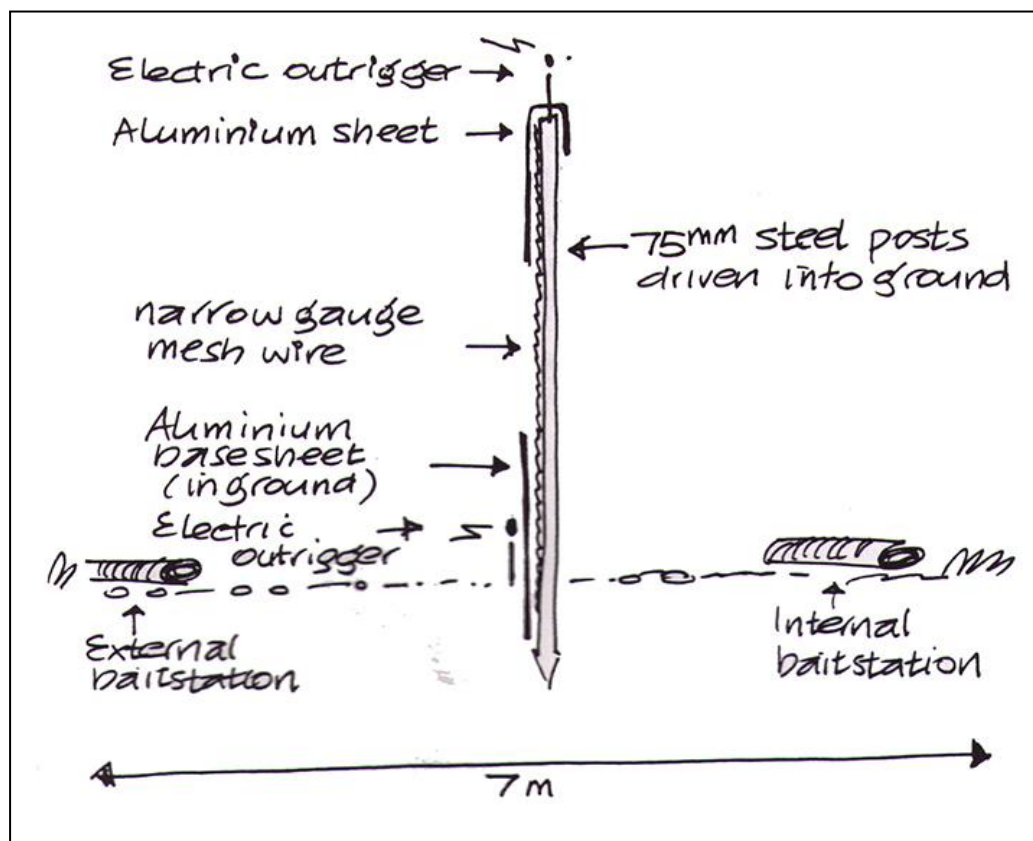
- A key to the success of this project is to secure the chosen site with a completely secure browser and predator proof fence that can be patrolled and maintained permanently.
- The technology needed is available, or at least very close to being available. It is essentially road building and fencing - two activities New Zealanders are very good at!
- Predator proof fences do exist. There is the takahe ranch at Burwood Bush and various predator fenced reserves in Australia and the UK. Proposals are in the pipeline for other special purpose fences in Coromandel, the Chathams and North Cape.
- The fence for this site would need to exclude:
 - cattle
 - possums
 - cats
 - mice
 - goats
 - stoats
 - rats
 - people

We would have to forget aerial predators such as hawks, moreporks and magpies initially, although their control at a later date may be practical.

- The fence for the site would be approx 8 kilometres in length. A road of approximately 7 metres (22 ft) width (metalled) would need to be built around the perimeter. This would be essential for maintenance and patrol work. For extremely steep sections or difficult areas, a smaller track (say 3 metres) would suffice.
- A fence of small mesh steel (10mm) 2 metres in height would then be constructed in the centre of the road around the entire perimeter.
- This can be further secured with aluminium sheets at the base (to prevent burrowing and scaling) and a further aluminium sheet on top (to prevent possum scaling).
- Additional security could be ensured with electric fencing. This would include a single wire on outriggers on the top of the fence and a wire 75mm above ground level at the base. The ground level wire would deliver a 5000 volt pulse into the ground. This would prevent animals from even approaching the fence and effectively creates a type of force field. It also means it doesn't matter if the electric fence is temporarily grounded by vandals or falling debris.

The electric fence could be solar or mains powered.

- A cross section of the fence could look like this:



- The site could be further secured by an outer ring of bait stations/traps to 'head them off at the pass'. A sanctuary would create an enormously attractive biomass which would act as a natural 'magnet' to rats, stoats and cats. By baiting the external perimeter, the predators could be drawn out of the surrounding habitat and caught, and the eventual result may be a very low incidence of predators over a wide area.
- To guard against breaching (which will inevitably happen) a system of internal bait stations and traps should be maintained on an ongoing basis.
- DoC is currently conducting research into secure fencing. They advise that a workable model can be developed and that a 2 to 3 year time frame is realistic for such a venture.
- One difficulty will be securing stream beds without causing disruption to water flows. The Karori Reservoir is ideal because the entire catchment can be fenced.
- Such roading and fencing would be expensive - initial estimates indicate as much as \$40,000 per kilometre. However, fencing and roading is routinely done on virtually every property in New Zealand. It would be worth it to outlay a little extra in this case and it is a 'one off' cost. The fence is really the key to success and it should not be skimped on.

- To prevent windfalls and to reduce the chances of possums leaping from tree to tree over the fence, taller trees within 20 metres of the fence will need to be pruned.
- A totally secure fence would not be required immediately. The initial fence could be constructed to eliminate goats, possums and cats. It could later be upgraded to eliminate rats, stoats and mice.

Conclusion

The technology exists, or is near at hand, to securely fence the site to exclude all browsers and ground predators and the cost is certainly worth the benefits and is not prohibitive by any means.

9. Clearing the Site

- Even before the site is secured browser and predator control can begin. Once the site is securely fenced, fully clearing it of predators can then be progressively achieved. When densities are at nil, or extremely low, permanent control programmes can then be maintained.
- DoC has well proven methods of clearing areas such as islands of browsers and rats. These include:

| | |
|---------------|--|
| Goats | <ul style="list-style-type: none"> • Shooting |
| Possoms | <ul style="list-style-type: none"> • Shooting • Talon drops • Talon bait stations |
| Rats and Mice | <ul style="list-style-type: none"> • Talon drops • Talon bait stations |

Programmes to control and reduce the numbers of these pests can be instituted well before any fence is built.

Talon bait is the best option. This is non-water soluble and highly effective, and can be easily dispensed from 'trickle out' bait stations. Stations are located on a grid at 100 metre intervals. About 350 stations would be needed in the sanctuary.

- Cats and stoats present a greater challenge. Any site chosen would be riddled with cats, and stoats are certainly present in Wellington.
- Trapping is a viable option but stoats in particular are notorious for being trap shy. Tracker dogs, especially trained (e.g. fox terriers), are perhaps a better option.
- One tactic which may work is to wait until well after the possums and rats have disappeared. This would mean extremely hungry cats and stoats in the sanctuary, all much more susceptible to bait and traps. (It may mean an initial decline in bird numbers as well, but this will probably have to be borne.)
- Progressive reduction of all browsers and predators to zero density within the sanctuary should be the aim - then an ongoing maintenance programme would be required.

- Tracks should be cut across the whole sanctuary to allow running of bait lines. These can later be used as emergency bait lines should there be a breach of the fence and, also, for public access at a later date.
- Costs for this exercise would primarily involve bait stations, talon bait and labour. Volunteers or work schemes would be practical to use in this case initially. Once the fence has been secured and zero density achieved (probably within 3 years) a single person would be able to maintain the ongoing control programmes.

Conclusion

A securely fenced site can be cleared of all browsers and predators in a reasonable time at a reasonable cost and it could be kept clear thereafter with an ongoing control programme.

10. Enhancing the Site and Habitat

- With the site clear of nasties (or at least with their numbers seriously reduced) thought can be given to releasing birds and animals into the sanctuary. However, this should not be done until we are certain they have not only enough food to live on, but enough to thrive and breed in large numbers and, eventually, to support extremely dense bird populations - far denser than we currently accept as normal.
- In addition, the aim should be to make the site such a 'cushy' place to live that birds won't want to go anywhere else until sheer weight of numbers forces them out. (Many native birds are notorious for flying away to parts unknown when released, although others are quite territorial by nature.)
- Clearing the site of browsers and rats should in itself have an immediate and dramatically beneficial effect on the vegetation. With no possums browsing the tops, trees will not need to put all their energy into replacing lost foliage. They will produce a lot more fruit as a result. None of this ripening and falling fruit will be eaten by possums and rats. There will be a significant increase in leaf fall and litter - returning more nutrients to the soil. The seedling count should skyrocket, growth rates of trees should increase significantly and insect life should vastly increase.
- Part of the initial surveys of the site should include a botanical survey to identify the extent of natural food sources and these should be matched to the needs of intended resident species. Where there is a discrepancy, alternative food supplies should be arranged. These can be supplied as follows:

| | |
|-------------|---|
| Immediate | <ul style="list-style-type: none"> • Food stations with honey water, chopped meat, fruit, seeds, etc. Especially during breeding season. |
| Medium Term | <ul style="list-style-type: none"> • Quick growing prime food source species (possibly including exotics such as tree lucerne, flowering gums, etc. These can be cut out later as alternative natives mature.) |
| Long Term | <ul style="list-style-type: none"> • Planting natural food sources that are missing (e.g. miro, kahikatea, etc.) |

- The Botanical Society are interested in assisting with the vegetation aspects of the ecosystem.

- A long term revegetation plan should be developed. The aims of that plan should be to:

- **provide all year round natural and abundant food supplies**
- **return the forest to as close to its original state as possible.**

- Such a plan would entail eventually replacing all exotic vegetation such as pines and sycamores with native species.
- The existing pines do not all need to be removed immediately. About one third can be felled to open up the canopy and allow light and natural native regeneration. These deadfalls can be left and will be an excellent source of grubs and insects for many bird species.
- Another one third can be killed but left standing to provide snags, perches and nesting holes.
- The remaining one third can be left meantime to provide high perches, wind cover and visual appeal. They can die out naturally (many of the pines are over-mature anyway).
- In addition to planting, eradication of weeds such as old man's beard, barberry and gorse should be vigorously pursued.
- Again, much of this work can be done by volunteer groups and work schemes.
- A wetland can also be created and/or existing lake or wet areas enhanced. This could involve planting of flax, raupo, sedge and other typical wetland plants. It may also mean earthworks to create dabbling area for waterfowl. Ducks Unlimited have indicated an interest in assisting with the creation of a native wetland.

Conclusion

The combined effect of these strategies should be to provide an ideal environment for vulnerable birds and animals to begin breeding, to attract other birds into the sanctuary and keep released birds in the sanctuary.

11. Releasing Species in the Site

- With the ideal conditions for survival and breeding, releases of threatened species can then be made into the sanctuary.
- Existing local populations of tui, fantail, grey warbler and silvereye should be sufficient to manage on their own without releases. Their numbers should increase rapidly as soon as predator control begins to take effect.
- Relatively common forest species should form the first wave of releases, even before a completely secure fence is in place. These could include:
 - rifleman
 - whitehead
 - tit
 - bellbird
 - wood pigeon
 - robin
- With supplementary feeding and browser and predator control, these birds should establish and increase in numbers very quickly.
- By starting on more common birds, capture and release techniques can be developed and monitored. The dynamics of population recovery can also be observed.
- Experiences with islands such as Kapiti and Tiritiri Matangi indicate native bird populations do recover very quickly in secure environments. Many birds will, given the right conditions, have multiple nestings and a greatly increased survival rate of fledglings.
- The Department of Conservation would need to agree to supply and manage the capture and release of species. They have indicated they would be prepared to participate in this venture. The Ornithological Society will also assist.
- The second wave of releases would involve ground nesting birds and rarities such as:
 - kiwi (especially little spotted)
 - kaka
 - stitchbirds
 - weka
 - saddlebacks
 - kakariki
 - kokako
- Release of these birds should be delayed until there is a completely secure fence and zero predator density.

- Release of these birds would need to be very carefully thought out and managed because of their value. (There aren't too many to spare!) However, their presence in the sanctuary is desirable because:
 - it would be of great value to have extra breeding populations of these birds as a biological backstop
 - the research value would be considerable
 - it would vastly increase the tourist potential of the sanctuary.

- Many wetland birds would find the sanctuary on their own account. These could include natives such as grey duck and heron. Other wetland birds could be introduced when the habitat is suitable. These could include:
 - pukeko
 - teal
 - crakes
 - shoveller
 - fernbird
 - scaup

- Reptiles and invertebrates should not be ignored. This would be an ideal habitat for both common and rare forest animals such as geckos, skinks, giant weta, snails, etc.

- The impact of birds such as weka on these animals would need to be considered.

- Once the more common birds have established a critical mass (say after 5 to 7 years) it is likely the surplus populations will spread out through the bird corridor and populate other forest tracts in the city. To capitalise on this, other key sites (such as Otari, Ngaio Gorge and Khandallah Park) should also have possum, cat and rat control programmes to keep predator densities at a low level (but not to try and eliminate them as in the main sanctuary).

- The techniques of attracting and holding extremely mobile species such as wood pigeon and kaka would need to be researched and perfected. Kaka are known to range over extremely wide areas and the homing instincts of released pigeon are known to be very strong.

- Citizens could also be encouraged to make their gardens attractive to native birds by:
 - planting attractive food plant species in their gardens and local bush areas
 - controlling their cats and eradicating possums and rats in their own gardens and local bush areas.

Conclusion

The release of a wide range of native birds and animals into a sanctuary is practical and desirable.

The results of this after, say, 10 years should be:

- a sanctuary thronged with literally thousands of native birds and a forest floor alive with lizards and insects.
- a genuinely unique tourist and education facility for the city.
- the dawn chorus will be heard again in Wellington
- vastly increased bird life throughout the city. Birds such as bellbirds, tui and wood pigeon should become common in people's gardens. Perhaps even the gregarious kaka could become a regular visitor to people's back yards!

12. Encouraging Community Involvement

- Conservation this close to the city must include people - not exclude them. The community should be given a full stake in the enterprise and a sense of ownership and responsibility for the venture should be encouraged.
- This can be done on a number of levels.

| | |
|---|---|
| Individual Membership and Subscription to the Trust | <ul style="list-style-type: none"> • Up to 7500 members from the Wellington region can be expected. • It could well attract thousands of members from outside the region because of its uniqueness. |
| Volunteer Activities | <ul style="list-style-type: none"> • Fence patrols • Pest eradication • Bait and trap line patrols • Planting schemes • Guides/Tour leaders • Supplementary feeding |
| Sponsorship | <ul style="list-style-type: none"> • Either corporate, business, trust or private. • For capital items (fence, buildings) or special captive and release of species. |
| Tangata Whenua | <ul style="list-style-type: none"> • For restoration of the natural taonga. |

- The individual members subscription has the potential to provide a secure and steady cash flow for the Sanctuary (est. \$300,000 pa), especially in its early stages when expenses are high and tourist income is not yet available.
- It could also be a prime source of regular donations.
- A prospectus should be issued early and the venture publicised widely with the aim of securing the needed membership level.
- Once obtained, this membership should be looked after with:
 - news updates
 - free entry to the Sanctuary
 - etc.

13. Developing the Venture

13.1 Research

- Early on the venture can be developed as a research centre and captive breeding centre.
- This will involve building aviaries and perhaps basic laboratory facilities.
- It will also mean developing links to the various research institutes and organisations:
 - Mt Bruce and DoC
 - Victoria University
 - Crown Research Institutes (FRI, DSIR, etc.)
 - Natural Science NGOs.
- The Sanctuary should rapidly become a centre for natural science studies and can be the focus of conservation research. Its proximity to the DoC Head Office should give it a major advantage here.

13.2 Tourism

- After about 5 years (est. 1998) the Sanctuary should have sufficient attraction to be a major player in tourism for Wellington.
- This will involve building:
 - an interpretation centre
 - special displays such as 'Primeval New Zealand', 'Brink of Extinction', 'Elsewhere in New Zealand' and 'Nature and the Maori'.
 - car parking facilities
 - picnic areas
 - accommodation/toilets
 - tea rooms and souvenir shops
 - top class walking tracks, board walks and viewing facilities.
- Tourism would need to be carefully controlled to ensure it had no negative effect on the wildlife.
- special tours and attractions can be arranged, such as:
 - 'Dawn Chorus' tours - early morning
 - 'Nocturnal' tours - at night to view kiwi, glow worms, etc.
- Wildlife viewing is becoming very popular. similar ventures overseas report very large number of repeat visits by people - especially locals.

13.3 Education

- The tourism displays can be established with the dual purpose of education and information and recreation. This would be especially true of the 'Primeval New Zealand' display, the 'Brink of Extinction' display and the interpretation boards placed on the public paths.
- The Sanctuary can sponsor education of the general public by informing people on how they can environmentally manage their own forests (landowners) and gardens (homeowners), grow native plants, encourage wildlife, etc.
- Links should be created with:
 - University
 - Environment Education Centre
 - Zoo
 - Schools
 - National Heritage Foundation
 - Conservation NGOs

to co-ordinate natural heritage education.

- Because of its uniqueness and location, the Sanctuary will be a natural focal point for such education.

14. Managing and Controlling the Site

- The sanctuary would need careful ongoing management to ensure it stays safe and viable in the long term.
- It would require a degree of permanent staff such as:
 - a manager
 - a scientific unit (botanist, zoologist)
 - a predator control/fence maintenance unit
 - a work gang.

However, staffing requirements would be much less than, say, the Wellington Zoo.

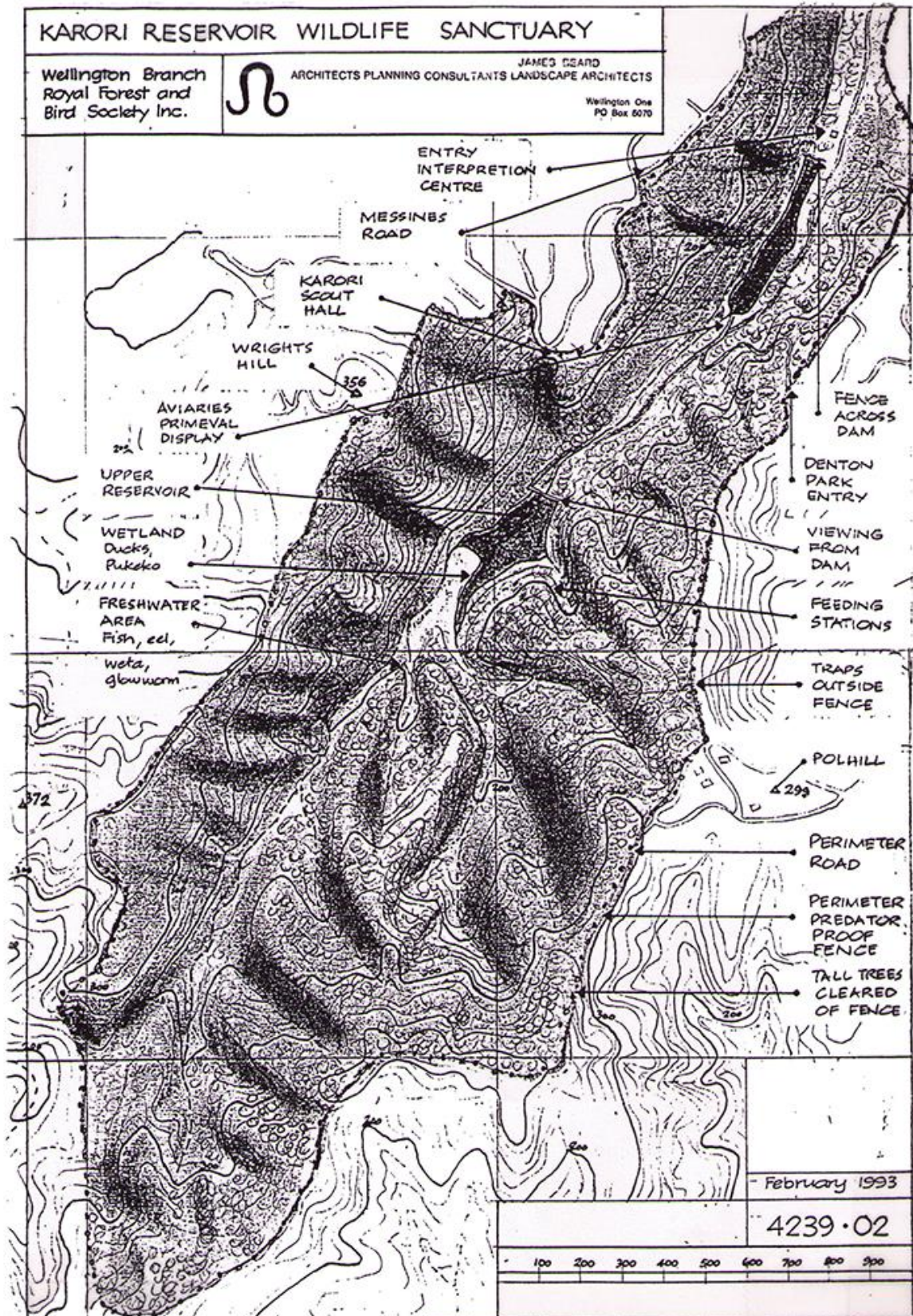
- Permanent work programmes would need to be maintained on:
 - the perimeter fence/security/predator control
 - supplementary feeding
 - track maintenance
 - replanting
 - eradication of weeds.
- Additional staff will be required in the tourist and education and community programmes but these would be funded by tourism revenue and grants.
- Ongoing management of the Trust and Trust membership would also be required.
- Other facilities required would include staff/administration buildings and educational/conference facilities.

15. The Next Steps

- The overall conclusion is that a sanctuary in the city is an economically, biologically and technologically viable proposition but it does require good funding and management.
- It is an idea whose time has come and it represents a wonderful opportunity for the city.
- To get it operative we need to do a little more thinking and talking to refine the concept.
- The first step, i.e. discussion with DoC to test the biological and technological assumptions of this concept, has been taken. They support the project in principle.
- After that, we need to involve the WRC and WCC Councillors, managers and planners and other interested parties and get their commitment.
- Following that, a management structure and Trust can be formed and we can get the scheme up and running.
- We need to act before the key sites are allocated for alternative uses. We may not get this chance again.

Jim Lynch
Wellington Branch Vice Chairman
December 1992

Appendix A: Provisional Site Plan



Our thanks to James Beard for the production of this plan.