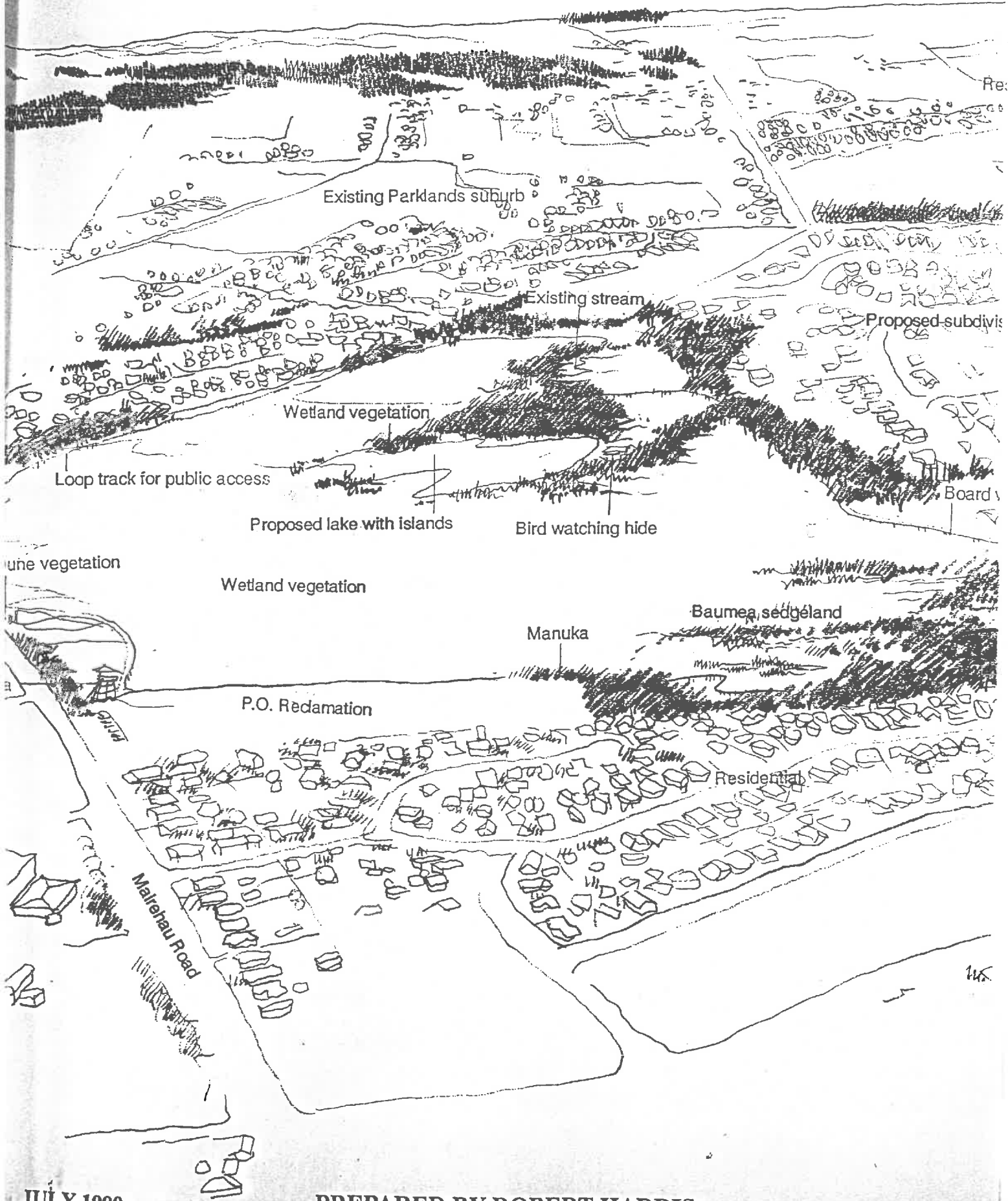


# DRAFT PLAN FOR TRAVIS SWAMP



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## 1.0 Description

Travis Swamp is an area of lowland situated between the Styx stream and the Avon Estuary in north eastern Christchurch. Its average height is 1m below M H W. It exists as a rare remnant of pre-historic wetland and coastal lowland podocarp forest once characteristic of much of lowland Canterbury (see Map I). Travis Swamp is fed by a mixture of surface runoff flowing via the slow moving Travis stream and natural artesian wells which have outputs reputedly corresponding with water levels in the Waimakiriri (Dalmer; 1971:20).

## 1.1 Wetland Characteristics

Technically the area is a pulustrine wetland ie a non-tidal fresh water vegetated wet ground (or swamp), and unlike many of New Zealand's high country bogs, is relatively high in nutrient status because of water movement and drainage, and is therefore capable of sustaining a relatively high biomass. It corresponds to Peter Johnson's Mesotrophic Category ie of medium fertility with only a moderate fertilizer effluent or sediment runoff. (Johnson 1989: 5) It has a good potential for wildlife and plant conservation.

## 1.2 Hydrology

Because it is a remnant wet area surrounded by reclamation, it is exceptionally responsive to changes in its surrounding catchment displaying this in its constantly changing water levels and the variety of vegetation found across it. During the winter it acts as a ponding area for the surrounding suburbs and farming area to the north. As stated previously its aquifer also appears to respond to wider water movements across the plains.

## 1.3 Classification

While the swamp is only a remnant of the previously wide expanse of wet lowland it is of sufficient size to contain several types of plant community. It is therefore a kind of unit defined by topography and containing several sub units. The plant communities correspond to the degree of water movement and depth as well as the extent of grazing and artificial drainage carried out in the past, eg Frosts Road, Corsairs Drain etc as well as drains recently opened up in the centre of the land corp block (29ha).

## 1.4 Vegetation

Dr Colin Meurk (Meurk 1988:48-51) describes five basic mixtures of vegetation or communities present in the swamp and they can be used as a basis for future wetland management (see Vegetation and list map). The five 'communities' are an approximation also of five different landscape

features and therefore have a validity as a basis for ongoing land management. They are:

1. *Willow Woodland* with an understory of Karamu (*Coprosma robusta*), Miki Miki (*Coprosma propinqua*) small colonies of the spider orchid (*Corybas rivularis*) on the edges of tracks, Kio Kio (*Blechnum minus*), Kohuhu (*Pittosporum tenuifolium*), Ti (*Cordyline Australis*) and struggling Manuka (*Leptospermum Scoparium*) among others.
2. *Swamp Shrubland* containing remnants of Manuka, Miki Miki, Matagowi, remnants and the locally rare reed, (*Baumea rubiginosa*). (Mason (1975 and 1976) surveyed Canterbury's *Baumea* population and considers that the Travis group is the largest remnant.)
3. *The Rush Sedge-grass Mire* is a mosaic of turf and tussock covering the greater area of Travis Swamp with rushes and sedges dominating in the wetter north and grasses and forbs in the more frequently grassed south. Withdrawal of grazing near the northern woodland would allow native sedges, ie *Carex Secta*, and reeds, ie *Baumea rubiginosa*, to dominate naturalised vegetation.
4. *Tall Swampland* largely monocultural stands of raupo (*Typha orientalis*), harakeke (*Phormium tenax*), interspersed with floating pond vegetation and cotula on the banks of a slow moving Travis stream. These areas are characterised by greater all year round water movement and are approximated by some of the artificial drains.
5. *Sand Ridge and Reclamation* surround the swamp on the northern, north eastern and western sides. They provide the natural margins of a managed wetland area and a contrast to the other four site types. The ridges and reclamations are more highly modified by roading and development hence they are largely covered by Adventitious weeds with sparse native vegetation bracken (*Pteridium esculentum*) and poro-poro (*Solanum laciniatum*).

## 1.5 Soils

The soils of the swamp are described as Awanui Complex, ie peaty silt loams with deeper peats under the willow woodland, gleyed waterlogged heavy silt loams under the pasture and sandy loams on the dune sites. The soil characteristics broadly coincide with the five plant communities and drainage levels. To optimise effort expended on recreational and conservational projects account must be taken of soil characteristics.

Investigation on the swamps soils was carried out by (Harris et al: 1946) focusing on subsidence, (Raeside and Rennie: 1974) soil classification of the Christchurch region and (Cutler: 1988) advocating retention of the soils. The Awanui soils and specifically the Travis Swamp examples are

regarded as difficult to interpret due to their variability (eg E J Barfow Cutler's submissions to the water rights hearing 10/1988) and difficult and expensive to develop for housing and farmland.

## 1.6 Summary

Travis Swamp is characterised by its being:

- a) A rare remnant wetland environment in a highly developed area;
- b) A freshwater swamp with medium nutrient status and relatively high bio mass production therefore creating potential for conservation;
- c) Responsiveness to surrounding catchment and aquifer movements;
- d) Defined by topography and drainage as a kind use unit. Its sub units are likewise defined by distinct vegetation and soil bands and the degree of water movement and ponding.

## 2.0 Developmental History

The development of Christchurch in European times has been characterised by the draining of the areas extensive wetlands. Much of the present city is sited on what was once swamp. Consequently most of the feeding spawning grounds for fish, breeding and migration areas for birds have disappeared. Vegetation communities have also been extensively modified by habitat modification and the pockets that remain are no longer representative of previous populations or ecologies. Such changes began with Maori occupation as there is sufficient evidence that local inhabitants interfered by cultivating particular plant forms and varieties and altered species balances by hunting. The intensity of habitat modification has increased however, with sophisticated drainage technology.

Travis Swamp in its original form provided a source of eels and flax for the local peoples and the area was seasonally occupied for much of Otautahi's (Christchurch's) human history. Development pressure, originally for farming occurred during this century (from 1928) and gradually modified the 'Marshlands' area. Drainage has proved expensive and the most technically difficult and uneconomic areas have been left until last, ie Travis Swamp.

Used as seasonal farmland, Travis Swamp has provided marginal incomes for its land owners including the Crown. Previous owners intending to develop the land for housing have also found the cost to be too great for the returns involved and only the combination of large area (over 200ha), Christchurch City Drainage subsidies and the companies contracting infrastructure and machines have made it viable for Travis Country Estates to proceed. At present the issue is one of whether the high marginal cost of development and the equally high potential returns

justify the destruction of this last piece of urban wetland environment. It is therefore a unique process of balancing two different forms of value.

### **3.0 Philosophy of Preservation**

A question of value. Preservation involves the process of assessing different forms of value. Contrary to popular belief, the monetary value of developing a resource is not balanced against a zero value of leaving the status quo. Retention of Travis Swamp as a wetland will incorporate the assessment on wildlife values, the value of genetic heritage of endemic plants, the maintenance of landscape values, lifestyle values, educational values, rehabilitation values, involvement of community values, the monetary values of tourism, the expression of a city identity and not the least grappling with a more sophisticated planning environment which is necessary in our current legislative environment. The process of assessing value has value in itself in that the individual organisation and community assess themselves and their neighbourhood.

### **4.0 Values Inherent on the Preservation and Development of Travis Swamp as a Wetland**

Underlying a discussion of value is the knowledge of a growing number of events which have reawakened in the public generally an awareness of the environment (MaCrae:1973:7). They arise in a number of forms: in the wish to stabilise the Brighton Dunes; in developing the concept of passive recreation to encompass nature walks and parks; in wishing to clean up the polluted waters of our visually and hydrologically important rivers; in the city's waste dumping policies; in the outcry against unnecessary development; in wishing to enhance the Garden City image by adding 'wild gardens' to the cultivated; and even in the thinking about symbols. Christchurch City's crest is 'significantly' supported by two Pukeko, one species among many that is threatened by undisciplined development.

Values by necessity are complex beliefs often inter-related to one another. The list below is an attempt to display the main aspects which are relevant to the development of Travis Swamp.

#### **4.1 Landscape Values**

Landscape deals with a four dimensional environmental matrix that changes over time it is a positive thing that must be understood less,

"as an object to be worked upon (but) rather ... as a receptive medium which for the sake of biological, physical and visual harmony should be explored carefully, it's values and potentials understood and the development fitted to it" (Challenger 1973:90).



With respect to north eastern and eastern Christchurch, Travis Swamp along with the estuary, the sand dunes, Bottle Lake and the distant Port Hills provides the context for all other developments in Christchurch. These areas can be said to frame the "Garden City". This can be partly evidenced by community response to TCE's plan which has been more widespread than the planners, City Councillors or developers expected. To take away an open space when the community gains from its retention and the necessity for building on this particular urban site is not self evident, is probably an example of exploitative planning. A better solution is to integrate the necessary and justified development into the southern section and by judicious use of tree planting and the juxtaposition of subdivision reserve against open space reserve maintain the open space values which are preset at this point in time. Existing planting such as the Lombardy poplar lines will also assist in integrating the two types of development, conservation and housing in a more adhesive and satisfactory blending.

Overseas Trends have sought to reverse the growth of an uncoordinated urban landscape by constructing new environmental and recreational buffers. In Christchurch we still have the opportunity to use the existing natural buffers. This has been encouraged by the Waimairi District Scheme which included Travis Swamp in a group of six parks meriting preservation for reasons of regional significance and the designation of 35ha under a water right reservation.

#### 4.2 Wildlife Values

The wildlife value of the swamp falls in four categories.

1. Safe sites for breeding
2. As a site for seasonal survival for migratory birds
3. Providing a sufficient buffer zone for populations to breed and co-exist
4. Providing a demographic buffer.

Design principles for reserves would suggest that large compact reserves are better than small or thin reserves if wildlife are important (see Fleming 1975).

If developed as a conservation and open site, the public access will have to be controlled and moderated by the careful siting of pathways. Currently 42 species of bird exist in the swamp, eels and one species of whitebait (see attached statements and lists provided by Andrew Crossland and V M Stout).

Of the bird species;

28 species nest in the swamp;  
21 species are wetland birds;

- 26 species are native;
- 10 species are vagrant or passing;
- 21 species are residents;
- 1 species, the Marsh Crake, is probably present (signs have been seen but may be extinct).

The swamp is not of international conservation importance but does have regional significance. Judicious management of vegetation and increasing cover and nesting sites will increase wildlife value. The species present however, do not have alternative sites elsewhere as they are already taken. Unless other wetlands are developed or enhance the loss of Travis Swamp will mean the loss of Canterbury's bird numbers (C F O'Donnell; 1985 cited Andrew Crossland).

#### 4.3 Resource and Biological Values

Resource values primarily lie in the reference and study values provided by swamps soils, plants and aquifers. As such they are a regional resource. The Swamp's vegetation provides a filter for run off from the Marshlands district and ameliorates high phosphate and nitrate movement into the estuary. Planting of specific plants eg Harakeke cultivars is of use to traditional crafts and indirectly tourism.

#### 4.4 Botanical Values

The Swamp is currently home to 176 vascular plants of which 50 are native and at least 27 lower plants are noted (Meurk, 1988:56-63) while the area is semi natural and the populations are remnant only, the area has the potential to be managed to provide an environment for greater numbers of native species (eg New Zealand lowland forest plants instead of willow woodland and greater numbers of sedges and orchids in pasture sites. The sand ridges can be planted with Kowhai, Kanuka, Karamu, Kohuhu, Ake Ake, Manuka mixtures to shelter and frame sites and encourage other wildlife.

While there is disagreement over the extent of site requiring Botanical reservation (Dr Connors in a submission to the Catchment Board Hearing described 3ha surrounding the Travis Stream as having high value (Start 10/10/88) whereas Dr Meurk views 51.9ha as necessary for the site to retain hydrological, topographical and botanical features), there is general consensus that some species and communities represented in Travis Swamp are disappearing and are worthy of saving.

#### 4.5 Spiritual Values

Both Pakeha/Tauitiwi and Maori cultures include attachment to natural values as part of their spirituality. In most contexts this is unspoken, however many involved in environmental issues regard this as an

role in encouraging and developing tourism. Recent experience in Kaikoura with marae and science based whale watching tours suggest that this is feasible.

#### 4.10 Community Benefits

The community benefits from diversity and a wide range of urban experiences. Attractive employment for Christchurch's unemployed is available if the Swamp was developed as a wildlife/plant reserve. Walkway construction, weeding and tour operations are among the possibilities which do not exclude mainstream urban development of part of the swamp.

The Community also benefits when it becomes involved in bringing about a project. The Mt Vernon project, Ferrymead etc have shown that appropriate development is enhancing of civic awareness and group involvement.

#### 5.0 PLANNING CONTENT

The passive recreation and conservation principles incorporated into the development of Travis Swamp are intended to maintain the values listed in section four. These values are also present in many of the reserves currently maintained by the Council, eg the Port Hills reserves, the Estuarine and the Groynes etc. Policy decisions have to be made on framing a general code of practice on:

- a) the level of interference necessary to maintain particular values;
- b) the category which each reserve or sub-area belongs to;
- c) the mixture of objectives achieved in each reserve category.

#### 6.0 PROPOSED MANAGEMENT OBJECTIVES FOR TRAVIS SWAMP

- 6.1 That the Swamp be maintained at a sufficient size to be effective as a wildlife refuge and breeding area.
- 6.2 That the surrounds be planted with a representative endemic selection of plants to provide buffer zones and landscape enhancement both for the Swamp and surrounding housing.
- 6.3 That major drains leading from the swamp be left open and sculptured to retain maximum wildlife and habitat utility, eg the western and Travis Stream (see recommendations by T R Partridge on integrating the drain into the housing development (Partridge, 1984:4)). This strategy has been adopted in many overseas wildlife place developments where space is limited or migration routes are present.

- 6.4 That major exotic weed infestations be removed by selective cutting and spraying eg willows, blackberry, gorse, hemlock etc.
- 6.5 That re-establishing communities eg low land Kaihikatea forest must be done with endemic Canterbury seed and cutting material. If possible it should be gathered on site.
- 6.6 That the five vegetation 'community' types, ie woodland, shrub, mire, dune and tall swamp, be managed separately in their planting and weed management.
- 6.7 That walkways and conservation platforms be carefully sited to facilitate public use without disturbing wildlife or destroying fragile plants.
- 6.8 That over the first season of management the sites of rare or locally endangered plants, eg the spider orchid, be identified and note taken of receptive sites for their deliberate reintroduction.
- 6.9 That ultimately ponds be created near the Travis Stream with nesting islands to increase the areas breeding utility and attractiveness to residents and tourists.
- 6.10 That the educational opportunities be identified by survey of schools, university, Maori groups, tourist operators etc, and a strategy adopted for integrating the swamp into a city wide educational resource base.
- 6.11 That development of conservation and passive recreation areas be part of the community in recognition of the variety of interests involved (see Royal Forest and Bird Society material on the development of Pauataunui and Taupo wetlands).

6.12 **Management Priorities for Travis Swamp**

Colin D. Meurk, DSIR, Land Resources/Botany, Private Bag Christchurch

The following is a suggested programme for the development of Travis Swamp as a nature park. Other objectives may be drawn out that will be complementary to an overall heritage theme.

- 6.12.1 Resolution of tenure within the primary conservation area - the Landcorp block and the northern part of Travis Country Estates private holding.
- 6.12.2 Establish a management committee. The local iwi runanga should be consulted.
- 6.12.3 Establish an interim concept and management plan to allow urgent works to be started; note the existence of some preliminary concept drawings (Seksan Ng and C.D.M.).

- 6.12.4 Fence out cattle from the conservation area; sponsorship could be sought for materials and service clubs could help erect the fence.
- 6.12.5 Establish a small, volunteer work team (10-20) to carry out urgent works.
- 6.12.6 Work team to begin control of blackberry, gorse and young willow invading the open swamp. Knowledgeable, sensitive people will be needed in careful application of cutting, chemical and hand "weeding" techniques.
- 6.12.7 Explore complementary objectives such as a Maori cultural centre on the southern part of the land.
- 6.12.8 Establish a ring walkway.
- 6.12.9 Excavate a lake with islands to enhance wildlife habitat; in exotic vegetation adjacent to the central island of willows.
- 6.12.10 Establish bird hides adjacent to the lake and an access board walk; some finance could be available from F & B, Stout Trust and other conservation sources.
- 6.12.11 Restore/improve vegetation:
- (i) Propagate manuka, mikimiki, ti kouka, karamu etc. from local sources and plant over drier parts of Landcorp block adjacent to willows;
  - (ii) Underplant areas of willow with Riccarton Bush type species and over time gradually thin the willows;
  - (iii) Monitor rare and endangered plants (in Christchurch context) and vegetation change, and carry out rescue management where necessary; plant population biologists at the University have expressed;
  - (iv) Restore dune vegetation along Mairehau Road;
  - (v) Establish harakeke plantations in eastern sector for cultural harvesting.
- 6.12.12 Establish an information centre with viewing area/cafeteria etc. (perhaps on Telecom reclamation).
- 6.12.13 Establish plant nursery at information centre where public can purchase Christchurch's native species for their own gardens and restoration (i.e. material from Riccarton Bush, Travis Swamp, and Port Hills).

- 6.12.14 Prepare resource document. brochures and booklets interpreting the natural and cultural history. Included would be inventory of plants, animals, soils, analysis of vegetation and environmental gradients, elucidation of vegetation history using pollen analysis supported by radiocarbon dating of sediments, integration of mapable data with Geographic Information System, investigation of cultural history.

## 7.0 ADMINISTRATION

Development of the swamp as a wetland conservation/recreation area required an input from the public (much of the information generated thus far has been gifted by interested parties, eg Andrew Crossland, Colin Ann Flannagan, Colin Meurk etc.). In the light of similar projects both overseas and New Zealand the best results have been obtained by an alliance of a local authority, Government department and interest groups. An alliance saves the local authority from committing too many resources and specialising when other groups with expertise are better able to contribute. Costs are also shared in this type of project which has local, city, regional and national aspects.

A Trust arrangement similar to that used for the acquisition of Mt Vernon may be the most viable purchase mechanism. Purchase of the swamp and a fund for ongoing maintenance is the first priority hence a list of contributors/trustees should be drawn up.

- eg, - Queen Elizabeth II Trust
- Vita Stout Trust
  - New Zealand Lotteries Board
  - Regional Council
  - Department of Conservation
  - New Zealand Forest and Bird Protection Society
  - Maruia Society
  - Issac Wildlife Trust
  - Canterbury and Lincoln Universities
  - The New Zealand Glass Educational Foundation
  - Canterbury Botanical Society
  - The Christchurch College of Education
  - Access Schemes
  - Mana Enterprises
  - Otautahi Runanga etc

The Christchurch City Council's role as a provider of passive recreation suggests that it has a role as:

- a) A guarantor of funding;
- b) A contribution on a pro rata basis;
- c) A provider of labour and expertise.

## 8.0 EQUIVALENT DEVELOPMENTS

In the last ten years a variety of 'native' projects have been developed in urban/periurban areas as a complement to unbalanced construction. These projects are quite varied and often exciting in their imaginativeness and financial effectiveness. Included are a few relevant examples having similar aims and scope to the Travis development. Christchurch has the opportunity to learn from other projects and incorporate the lessons from existing park management.

## 9.0 OPTIONS FOR DEVELOPMENT

Developing the Travis site involves three levels of interference which may go hand in hand or operate quite separately.

- a) Removal of existing impediments eg weeds, rubbish etc;
- b) Actively planting, labelling and studying the site;
- c) Fencing, rerouting drainage, sculpturing ponds, nesting sites and drains, building board walks and observation platforms and creating access.

## 10.0 CHARACTERISTICS

The five vegetation zones require slightly different management to achieve 'balanced' development.

- 10.1 The willow woodland requires selective removal of weed species and willows and planting of lowland forest species, eg Kahikatea, Totara, Lophomyrtus, Harakeke, Astelia sp, Coprosma sp, etc. Present populations must be clearly identified particularly seasonal perennials. Tracks or walks as part of a total walkway system is an integral part of development. Labelling and signposting is a desirable approach.
- 10.2 Shrubland. The remnant populations of Baumea, Rubigrosa and Leptospermum should be encouraged and substantially added to. Muhlenbeckia complexa, plagianthus, Sophora, Clematis etc are a number of possible plants that could be re-established to maintain a recreated shrub environment.. Control of blackberry is necessary.
- 10.3 The Sedge-grass mire is characterised by its open character, this should be retained. Increases in water level caused by the Travis housing development will encourage endemic sedge species and reduce weed problems. Selective weeding may still be necessary, particularly willows. Walkways and labelling can be constructed by sections to complement other development.
- 10.4 Tall swampland. This is the core of Travis Swamp identified by all botanists as retaining the key botanical and wildlife values. The

maintenance of water level and Travis Stream flow are necessary elements in retaining the status quo. Ultimately it may be possible to create small lakes to increase the habitat values of the area. Care must be taken over siting hides and walkways:

- a) To avoid disturbance and,
- b) To avoid disrupting the 'landscape views'.

The area has few weed problems due to a far greater depth of water and its being a core wetland site.

- 10.5 The sand dunes bordering the site and ultimately the edge of the housing development are the buffer zones fringing the swamp proper. They provide an opportunity to re-establish the endemic scrub/bush communities found in pre-European Christchurch/Otautahi. Species such as Kunzea (Kanuka), Sophora (Kowhai), Dodonea (Ake Ake), Pittosporum sp (Lemonwood), etc. The area also provides and will sustain the greatest use. Care must be taken that the correct flow patterns are generated and information and adequate platforms are provided.

## 11.0 PROBLEMS AND SOLUTIONS

- 11.1 Finance - no one party has sufficient funding the purchase and/or develop the Swamp.

The possible solution is a co-ordination between interested parties.

- 11.2 The interests of the housing estate developers and the conservationists and public are comprised whichever planning decisions are taken.

By listening to the viewpoint of the other party a dialogue can be maintained which will allow sensible site development and enhanced value both to the housing estate and other interests.

- 11.3 There is a constant pressure to adopt poor solutions to urban problems because of pro-forma planning requirements to deal with issues piece by piece, ie water rights, zoning, concept planning etc. This pressure mitigates against comprehensive development.

A solution is to deal with landscape, environmental and recreational issues at an early stage in the process. The Resource Management legislation will go part of the way towards 'planning in context', a necessary attribute in the modern community environment. More attention must be paid to the integration of disparate factors in the city's departmental and planning processes.



## 12.0 SUMMARY

- 12.1 The Travis Swamp is a remnant wetland environment with good conservation values and potential.
- 12.2 It is a natural wetland defined by soils, hydrology and topography.
- 12.3 Its natural features may be comprised by poor development (eg drain filling etc).
- 12.4 The site is composed of five vegetation groupings, each with their own characteristics and development potential.
- 12.5 The past European history of Christchurch/Otautahi has been that of drainage and development. At this point in time account of remnant values must be taken before they disappear.
- 12.6 Botanical wildlife, educational, Maori spiritual landscape values etc are coincident with the images which we have tried to create for our city (Garden City, Shining City etc). Recognition of this allows us to use resources, ie reserve land, to greater profit than we otherwise would.
- 12.7 The development of Travis Swamp as a wetland conservation area incorporates the principles and values common to other reserve land. These common principles allow a more coherent planning framework.
- 12.8 Management objectives for the Swamp include enhancement of the area values by practical techniques of planting, landscaping, earthworks, weeding, appropriate building, survey and development of educational opportunities.
- 12.9 Administration is a shared responsibility between interested parties eg city Regional council, environmental groups, educational bodies, hospitals etc. The appropriate legal device is therefore a Trust which recognises the widespread responsibilities and participation.
- 12.10 Environmentally sensitive development of an urban environment is becoming more common. Examples in the text are given for New Zealand and Europe.
- 12.11 Options for development exist at three levels of intensity/interference/management:
  - a) Cleaning up existing areas;
  - b) Labelling, studying and planting the site;
  - c) Constructing, draining and landscaping the site.



12.12 The site characteristics generate a division of the swamp into five vegetation and habitat areas, ie:

- a) Woodland;
- b) Shrubland;
- c) Sedge-grass mire;
- d) Tall swamp;
- e) Sand dunes.

12.13 A comprehensive development of the site incorporating community, conservation, and environmental values involves financial interest group and procedural problems. Co-operative financing, earlier negotiation and the growth of comprehensive planning procedures will go some of the way towards solving these issues.



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