



VIRGINIA LAKE RESERVE MANAGEMENT PLAN

Vision, Objectives and Policies



NOVEMBER 2009

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Virginia Lake Reserve Management Plan

1. INTRODUCTION

1.1 Purpose of this Management Plan

The purpose of the Virginia Lake Reserve Management Plan is to produce a working document that defines the Wanganui District Council's management objectives and policies for the day-to-day and long term management of Virginia Lake reserve. This reserve management plan provides the framework within which the management of the reserve will be carried out and provides for consistent decision-making.

- Because Virginia Lake is not defined as a “reserve” under the Reserves Act 1977, the provisions of that Act do not apply and there is no statutory obligation on Council's part to prepare a management plan. Virginia Lake has however been identified by the Council as being one of Wanganui's premier parks, of which there are six in total. Premier parks are those which have the following features:
 - Moderate to high historical and heritage importance,
 - High cultural significance,
 - Very high visual and icon significance,
 - High community significance and high level of use,
 - None through to medium conservation value,
 - District location importance.

Council considers that because of the Virginia Lake's special value and significance a management plan should be prepared. This will provide the Community with certainty about the reserve and enable the Council to manage it more effectively.

This management plan does not set out any specific work programme for Virginia Lake. Rather it provides a vision for the reserve and a framework of objectives and policies that set out the parameters for the use of the reserve and guide the formulation of development programmes and maintenance contracts. The management plan also highlights some items that need further consideration or addressing and include suggestions for various works or improvements.

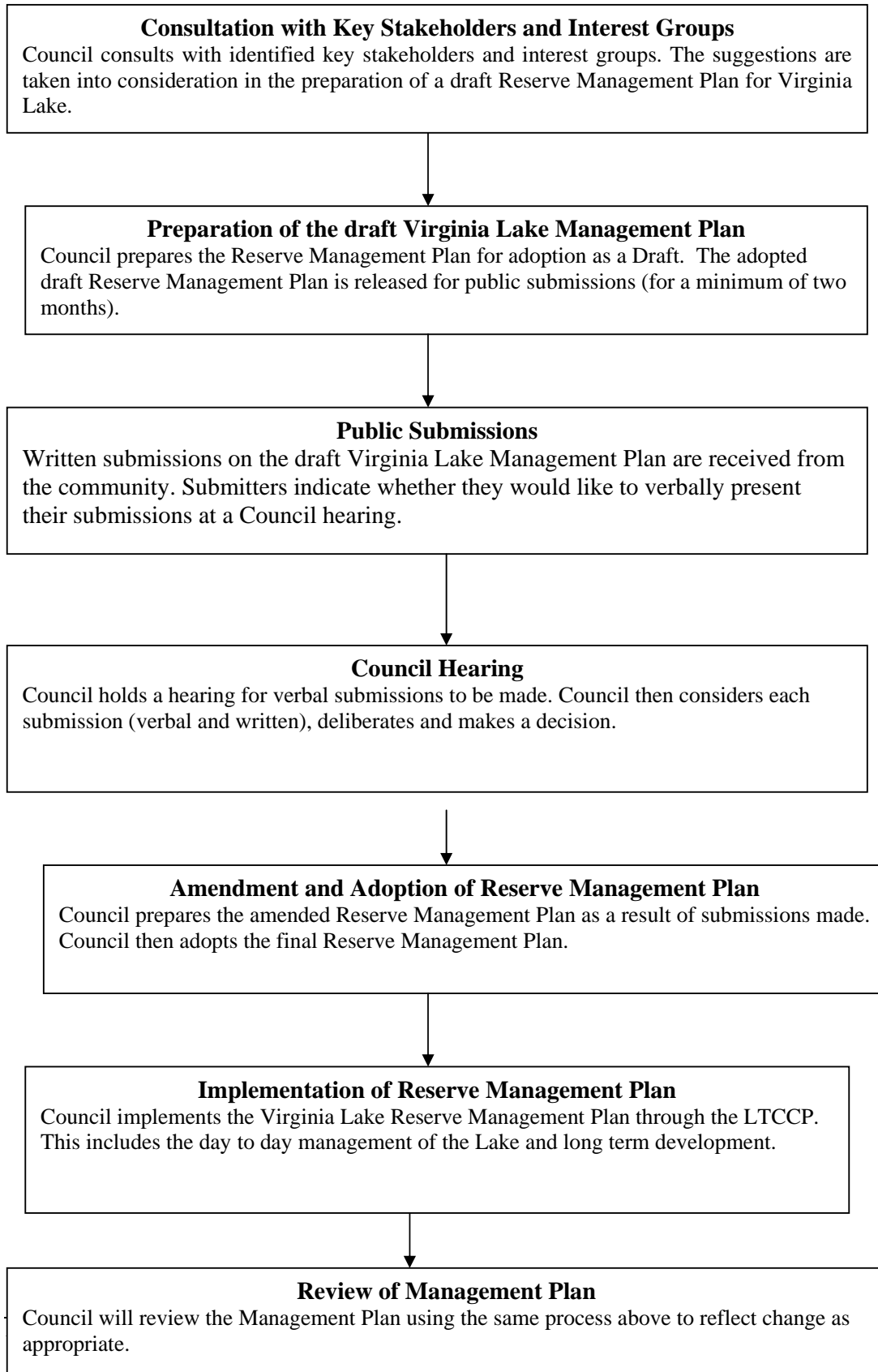
This Management Plan has been prepared largely in accordance with Section 41 of the Reserves Act 1977, which states:

“The Management Plan shall provide for and ensure the use, enjoyment, maintenance, protection and preservation, as the case may require, and, to the extent that the administering body's resource permit, the development, as appropriate, of the reserve for which it is classified...”

This Reserve Management Plan will be subject to continuous review to adapt to changing circumstances or increased knowledge about Virginia Lake Reserve. The review process is outlined in the Reserves Act 1977 and requires a public notification and submission process. A full review will be carried out at five yearly intervals.

The framework used for developing the Virginia Lake Management Plan is set out in Figure 1.

Figure 1. Framework Used for Developing Virginia Lake Management Plan



1.2 The Reserves Act 1977

The Reserves Act 1977 applies to all public land that has been classified and gazetted in accordance with the acts provisions.

The purpose of the Reserves Act in accordance with section 3 is:

- (a) Providing, for the preservation and management for the benefit and enjoyment of the public, areas of New Zealand possessing—
 - (i) Recreational use or potential, whether active or passive; or
 - (ii) Wildlife; or
 - (iii) Indigenous flora or fauna; or
 - (iv) Environmental and landscape amenity or interest; or
 - (v) Natural, scenic, historic, cultural, archaeological, biological, geological, scientific, educational, community, or other special features or value:
- (b) Ensuring, as far as possible, the survival of all indigenous species of flora and fauna, both rare and commonplace, in their natural communities and habitats, and the preservation of representative samples of all classes of natural ecosystems and landscape which in the aggregate originally gave New Zealand its own recognisable character:
- (c) Ensuring, as far as possible, the preservation of access for the public to and along the sea coast, its bays and inlets and offshore islands, lakeshores, and riverbanks, and fostering and promoting the preservation of the natural character of the coastal environment and of the margins of lakes and rivers and the protection of them from unnecessary subdivision and development.

The Reserves Act 1977 specifies and outlines the management requirements for the council's reserves. It specifically requires the development of management plans for all recreation reserves to enable effective planning and administration. In particular, a management plan "should be viewed as a community document... (it) provides the community with certainty about the function and management of each reserve or grouping".

1.3 Related legislation

The District Council is required to take into account a number of other Acts in the management of its parks and reserves. As well as the Reserves Act, the policies in the Virginia Lake Reserve Management Plan are principally influenced by the following:

- Resource Management Act (1991)
- Local Government Act (2002)
- Conservation Act (1987)
- Treaty of Waitangi Act (1975)
- Historic Places Act (1993)

Other Acts relevant to the management of Virginia Lake include the Health Act 1956, Building Act 2004, and the Litter Act 1979

Resource Management Act (1991)

The Resource Management Act seeks to promote the responsible management of both physical and natural resources in order to avoid irreparable environmental damage. Sustainable practices will be those which manage “the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety”. These measures will:

- Sustain the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations;
- Safeguard the life-supporting capacity of air, water, soil, and ecosystems; and
- Avoid, remedy, or mitigate any adverse effects of activities on the environment.

Of particular consequence to the Wanganui District Council is the Resource Management Act’s District Plan requirements. This document sets minimum environmental standards and specifies how land use, subdivision and development activities will be managed to protect our District’s natural resources. These approaches are intended to reflect the community’s expectations, and as such, Council is required to undergo public consultation when preparing, reviewing or amending the Plan.

The Resource Management Act also enables territorial authorities to request financial contributions for development in order to ensure that park and reserve provision continues to match urban growth.

Local Government Act (2002)

Section 198 of the Local Government Act accords Council the authority to require a development contribution to fund increased growth driven demand for such things as reserves, network infrastructure and community infrastructure. Growth is taken to mean an increase in population, households or allotments.

Council’s current Development Contributions policy is contained in the 10-Year Plan 2009-2019 and has been prepared in adherence to the stipulations of the Local Government Act as opposed to the Resource Management Act.

Conservation Act (1987)

The Conservation Act 1987 promotes the conservation of New Zealand’s natural and historic resources. The Reserves Act is listed in the First Schedule as being one of the Acts administered by the Department of Conservation.

Section 6 of the Conservation Act 1987, provides that the Department of Conservation’s functions include:

- Preserving all indigenous freshwater fisheries, and protecting recreational freshwater fisheries and freshwater fish habitats;
- Advocating for and promoting the benefits of conservation of natural and historic resources generally and the natural and historic resources of New Zealand in particular; and
- Preparing, providing, disseminating, promoting, and publicising educational and promotional material relating to conservation.

Treaty of Waitangi (1975)

Section 4 of the Conservation Act 1987 requires administrators managing lands under the Reserves Act 1977, to give effect to the principles of the Treaty of Waitangi; in particular when formulating and implementing the Councils reserves management policy. Reserve management plans must recognise and provide for the relationship of the Tangata Whenua and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.

The Council must therefore consult with and have regard to the views of iwi or hapu before undertaking action and making decisions about reserves for which it is the administering body.

Historic Places Act (1993)

The purpose of this Act is to promote the identification, protection, preservation, and conservation of the historical and cultural heritage of New Zealand through the Historic Places Trust and Board of Trustees.

The Historic Places Act 1993 defines an archaeological site as a place associated with pre-1900 human activity, where there may be evidence relating to the history of New Zealand.



Gates at Virginia Road entrance to Virginia Lake – protected in District Plan

1.4 Links with Other Council Plans and Strategies

District Plan

The District Plan is statutorily required by the Resource Management Act (1991) and seeks to ensure the sustainable management of both natural and physical resources as well as general environmental protection. It is responsible for guiding and controlling all development and land use within the District and is concerned with the effect of land use activities on social, cultural, economic and environmental wellbeing.

10-Year Plan (LTCCP)

This plan sets Council and community priorities for the next ten years and is subject to a compulsory process of review every three years. The Long-term Council Community Plan is compulsory under section 93(1) of the Local Government Act (2002). Included within the 10 year plan is a Parks and Reserves activity plan which details the service delivery for the activity and how it aligns with Council's overarching Family-Friendly Strategy. The overall goal of the Parks and Reserves activity is to enable the community to engage in both passive and recreational activities by providing amenity space and facilities that are accessible, available and relevant to the whole community; and which add to the overall ambience and image values of the District.

Annual Plan

The Annual Plan is directly related to the 10-Year Plan and is also responsible for identifying the services and activities that Council will deliver, including costs and payment plans. It includes expenditure on reserves and special projects affecting reserves. The Annual Plan is produced each year except for in years when a 10-Year Plan is required.

Associated bylaws, policies and strategies

There are a number of additional bylaws, policies and strategies that are related to this reserve management plan and with which the management plan must seek consistency. These documents include:

- Wanganui District Bylaw, 1996
 - Part 10: Cultural and Recreational Facilities
 - Part 12: Dog Control
 - Part 20: Public Places, Parks and Reserves
 - Part 21: Refuse
 - Part 22: Trading in Streets and Public Places
- Community Outcomes
- Strategic Plan (Family –friendly Strategy)
- Parks and Open Spaces Strategy
- Recreation Plan (1992 & 1994)
- Solar Protection Policy
- Tree Policy
- Parks and Reserves Provision Analysis

1.5 How to Use this Reserve Management Plan

This management plan identifies the significant issues relating to the management of Virginia Lake, and the objectives, policy statements and implementation methods that derive from them. It applies the strategic direction provided through documents such as the Parks and Open Space Strategy, Community Outcomes and the Family-Friendly Strategy. The key areas of the management plan are explained below:

Vision

The vision outlines the fundamental purpose of the reserve and guides how it will be developed and managed to ensure the overall character and values will be maintained and enhanced in the long term.

Issues and Policy Considerations

The issues and policy considerations identify matters of significance to Virginia Lake reserve or matters of concern which require attention or resolution.

Objectives

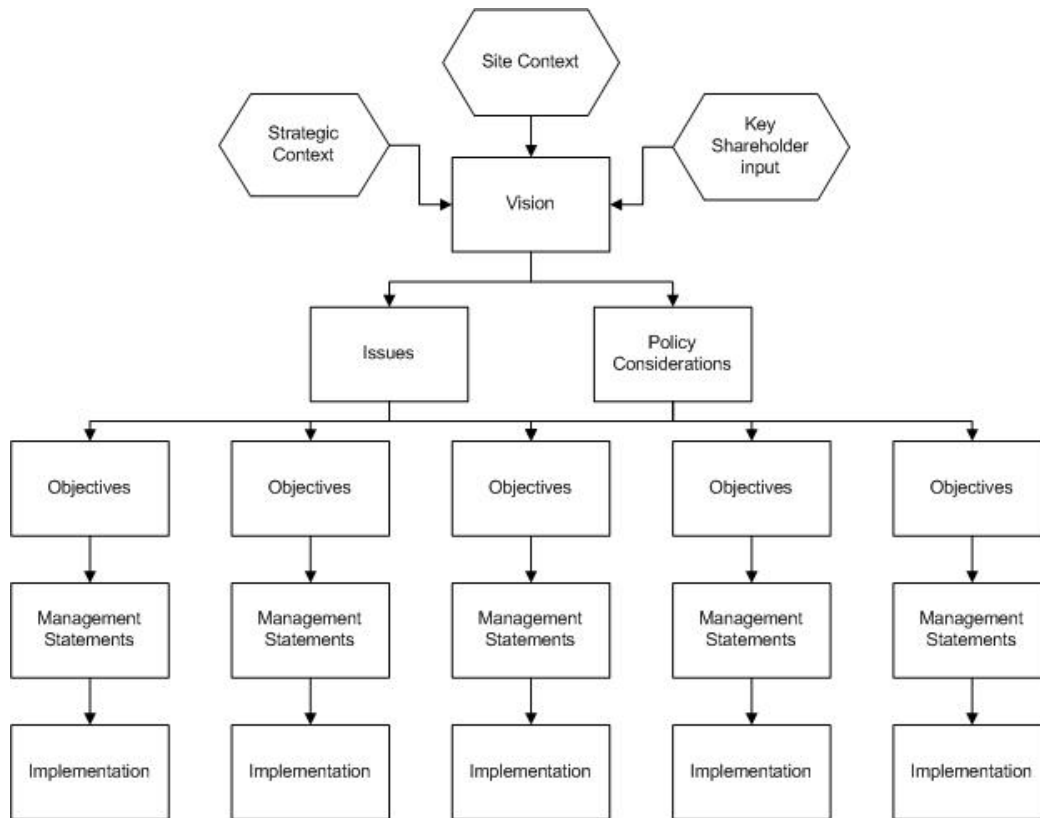
The objectives are statements that summarise the Vision, Issues and Policy Considerations and identify the end position that the Management Plan seeks to achieve.

Policy/Management Statements

The policies or management statements outline the Council's position in relation to a matter and provide guidance on what can be undertaken in the reserve.

Methods/Implementation

The methods are specific means of action that can be taken to achieve the vision, and implement the objectives and policies for the reserve.

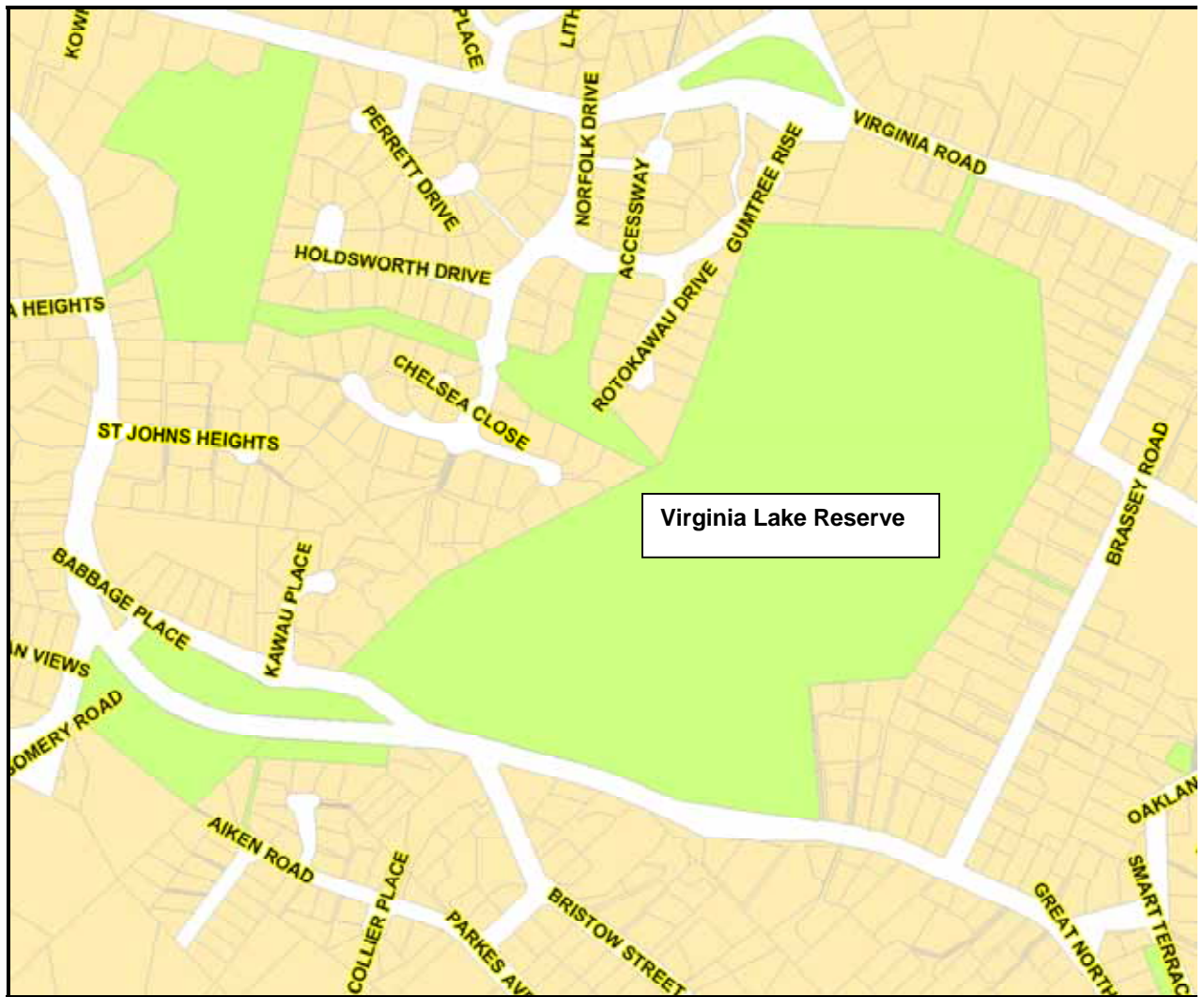


2. CONTEXT

2.1 Location

Virginia Lake is located approximately one kilometre north of Wanganui City, and fronts onto Great North Road (State Highway 3). Virginia Lake is surrounded by residential houses; on Brassey Road, Virginia Road, Gumtree Rise and Norfolk Drive; with six access points to the reserve. These six access points to the lake are found in various locations around the lake and include:

- Main car park on Great North Road, located on the south-western corner of lake,
- Great North Road, south-eastern corner of lake,
- Pedestrian entry on the western side of the lake off Brassey Road,
- Pedestrian entry on northern end off Gumtree Rise,
- Pedestrian entry on Norfolk Drive,
- Pedestrian entry on the northern side of the lake off Virginia Road, also known as Phoenix Palm Entrance.



Map 1 Virginia Lake Reserve - Locality Plan

2.2 Legal Description

Virginia Lake is legally described as the following:

Section 16 Right Bank Wanganui River Part 3.5713 ha
 Section 17 Right Bank Wanganui River Part 0.0797 ha
 Section 17 Right Bank Wanganui River Part 0.0498 ha
 Lot 22 DP 259 Part 0.0622 ha
 Section 16 Right Bank Wanganui River Part 84.1359 ha
 Lot 2 DP 9708 0.0108 ha
 Section 16 Right Bank Wanganui River Part 4.4429 ha
 Section 16 Right Bank Wanganui River Part 8.5381 ha
 Section 15 Right Bank Wanganui River Part 1.6946 ha
 Section 17 Right Bank Wanganui River Part 1.4025 ha
 Lot 1 DP 9708 0.0265

2.3 Physical / Landscape Characteristics

Virginia Lake is approximately 18.5 hectares in area. The reserve can be broadly separated into two distinctive areas. These are the southern activity area adjacent to Great North Road (State Highway 3) and the Northern end of the reserve, which acts like a scenic backdrop to the reserve. The Southern end of the reserve incorporates the main recreational area including the Winter Gardens, car parking and other visitor related facilities. The southern end of the reserve covers approximately 20 percent of the total area while the northern end of the reserve is much larger in size and much more densely planted.

While the two areas are fundamentally quite different, they are both dependent on each other. This becomes evident through visual appeal and local amenity, as the northern area provides a scenic backdrop and setting for the lake and the southern area of the reserve. Similarly, the southern area provides a buffer to the more natural environment of the northern area.

The Southern area of the reserve differs from remarkably in character from the northern area. The southern area is viewed as the “developed” section of the reserve. This area includes the main access points to the reserve and main activity features and the centre of the traditional activities. These features and activities include the Winter Gardens, the aviary, the punch bowl, the duck feeding areas and the ornamental garden displays. The success of the reserve and the southern area hangs on the contrast between the two character areas.

The northern area of the reserve is further subdivided into three landscape character areas. These include:

- (i) The parkland character area,
- (ii) The conifer plateau area,
- (iii) The mixed woodland area.

While these three different landscape category areas appear to be similar in landscape character and appearance in that they are densely planted, they are very different and need special management to exploit and enhance the differences as an added feature and attraction to the reserve.

The Parkland Landscape Character Area

The parkland area is different to both the conifer plateau area and the mixed woodland area. Within the parkland area the trees generally tend to be seen as individual specimens, and contain very little or no secondary growth or under planting. This section of the reserve has a very distinctive Victorian appearance. The band rotunda is an important element and focal point within the area. Other features located within the parkland area include the twin bridges water garden, the spring garden and the peace garden.

Conifer Plateau Area

The conifer planting is located at the northern end of the reserve. The conifer plantings include individual specimens located on a broad flat plateau adjacent to the reserve entry off Virginia Road. The peninsula like land form extends into the lake

from the conifer plateau area into the lake which incorporates the Tiki Canoe Memorial, a notable feature of this area.

Mixed Woodland Area

The mixed woodland includes native and wetland plantings. This area is adjacent to the conifer plateau area and has a dense cover of mixed trees including many fine deciduous trees which display striking seasonal variations particularly during the autumn months.

2.4 Cultural & Historical Context

Virginia Lake was formally known to Maori as Rotokawau - meaning “the lake of the black shags”. The lake was named Rotokawau after a bird, which is said to have preferred its waters. Additionally, a small fortified pa existed at the north-western end of the lake. Today the site is marked by the Tiki Canoe Memorial. The Tiki was erected in recognition to Pura Manihera (Mrs Gregor McGregor), whom played a significant role in assisting and raising funds for the work of Wanganui Beautifying Society. Virginia Lake has great significance to the local iwi of Wanganui.

The land was purchased by the Wanganui Borough Council before formally renaming the lake, Virginia Lake. The lake was renamed Virginia Lake due to its similarities to the Virginia Waters, in Surrey, England.

Virginia Lake was seen by the Wanganui Borough Council as an ideal source of water, and the members of the Council set their minds on utilising the water of the lake. The Mayor, William Hogg Watt, had offered the water from Westmere Lake, from within his estate. However the Council declined the offer as they had their sights on Virginia Lake. The Council members were then instructed to approach Mrs Hair, the owner of the lake and the adjacent land, with the intention to come to some arrangement over the use of the water. An arrangement was made in February 1876. In July 1876 Lake Westmere was gifted to the city by the Mayor and a costing was being worked on to form a pipe line between the two lakes. The plans of this pipe line were put on hold as Mrs Hair petitioned the Supreme Court, requesting an injunction to prevent the Council from laying the pipe line. The court upheld Mrs Hair’s submission and granted her application.

In 1879 the Council surveyed Virginia Lake and began a case to acquire the land under the Public Works Act. Additionally an immediate decision was made to temporarily have Westmere Lake run into Virginia Lake. This would ensure that the pressure and the quality of the water could be maintained over the summer months. The land was eventually acquired by the Council in 1884.

The Borough Council of the time ran a competition in 1904 asking the general public to submit designs for the lay out of the lake and the surrounding area. In 1909 these plans were put in place to make the reserve more attractive, and much of the ferns and scrub were removed. In March 1914, after extensive planting and labour inputs, the grounds were formally opened to the public. Originally the main entry to the grounds was located at the south-eastern side of Virginia Lake; however, since the opening of the Winter Gardens in 1940, the main entrance was relocated to the south-western side of the lake where it remains today.



Gates at south-eastern entry to reserve

3. ISSUES AND POLICY CONSIDERATIONS

3.1 Introduction

This section identifies the main issues and considerations relating to the management objectives and key activity areas for Virginia Lake.

3.2 Administration and Management

Virginia Lake is currently administered and controlled by the Wanganui District Council. Day to day maintenance of the reserve is contracted to local providers.

Formal declaration by the Council of the land incorporated within Virginia Lake as a reserve under the Reserves Act 1977 has not as yet occurred.

It is important to note that this management plan only provides a framework for the management of Virginia Lake reserve. If the reserve was covered by the Reserves Act specific or actual uses would be matters for determination by the administering body under the provisions of this Act or other legislation.

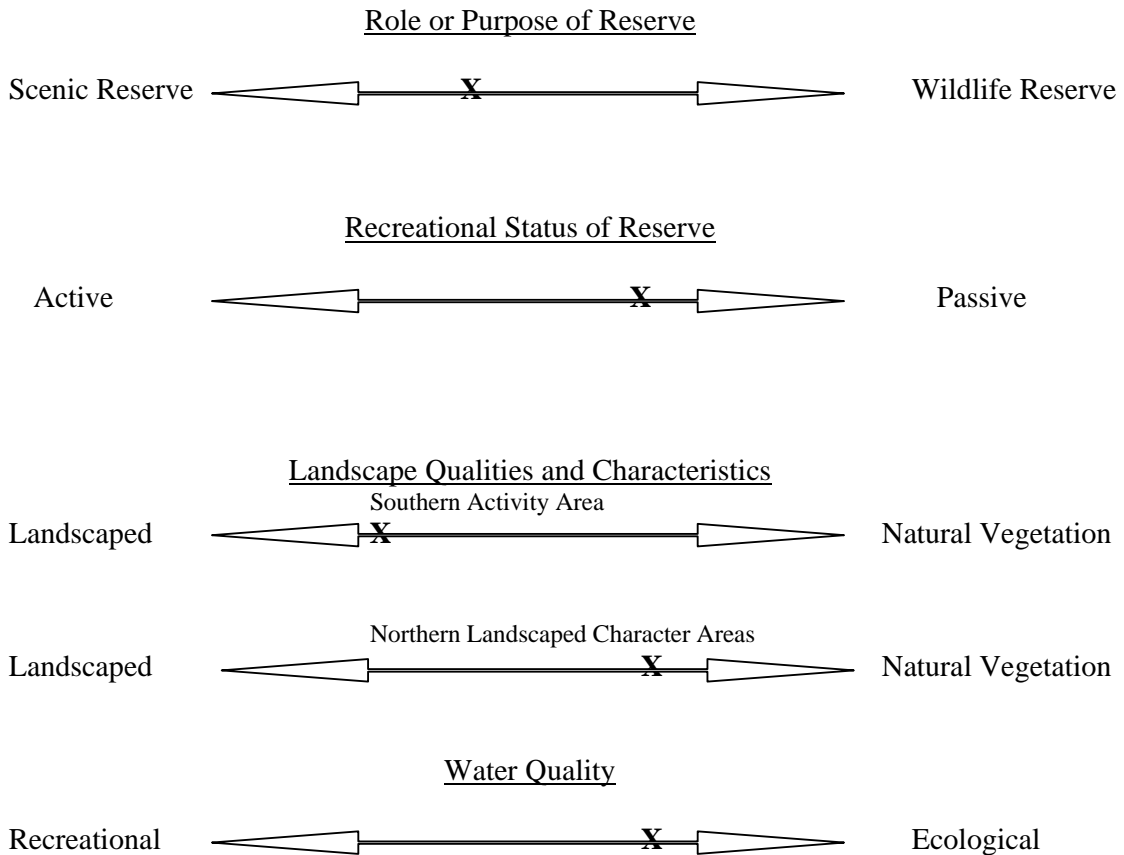
Declaration and classification of Virginia Lake under sections 14 & 16 of the Reserves Act will formalise the intention of the Council to control and manage the land as reserve land for public use and enjoyment whilst protecting its character and value. It is therefore important that this process should occur in conjunction with the preparation of the Management Plan for Virginia Lake.

On 29 October 2007, at the Triennial Council meeting, a Virginia Lake Working Party was established to provide the governance oversight for Virginia Lake. Key functions set out in the Terms of Reference prepared for the Working Party in 2008 are:

- establish the presentation standard that will ensure Virginia Lake Reserve is in pristine condition as a premier park at all times.

- establish the budget that ensures the required presentation standard is achievable.
- identify expectations of Virginia Lake contractors to be defined in all future contract documentation for work at Virginia Lake.
- encourage community pride and participation in Virginia Lake Reserve through appropriate events, sponsorship, and Council approved landscaping activity.
- assist in the preparation of a Management Plan for Virginia Lake Reserve.

The advice and direction of the Virginia Lake Working Party has been sought in developing a vision for the reserve looking out 20 years. This has included finding a balance between various competing activities, management philosophies, and standards of maintenance in terms of the following continuums:



3.3 Landscape Management and Protection

Water Quality

Active management of the biology of Virginia Lake will be required in future, to maintain and improve the features that provide amenity for the citizens of Wanganui.

Virginia Lake like many other lakes along the west coast, has formed, and is contained within a natural hollow between sand dunes. It is one of the largest natural hollows which has no natural outlet, and is relatively deep. The lake is approximately 4.5 hectares in size. Virginia Lake has no direct inflow or outflow therefore not allowing the lake to flush naturally. This limited flushing results in the nutrients that have entered the lake being retained. Water enters the water body through runoff and seepage from the surrounding area and one storm water pipe which discharges into the lake at the northern end of the lake at Virginia Road. There is also an outlet located at the south eastern corner of the lake, which discharges into the stormwater reticulation in Great North Road.

Virginia Lake, due to its high nutrient input has become eutrophic. The high nutrient concentration provides food for many micro-organisms, and has in the past been frequently providing food causing algae blooms. The dominance of algae leads to an unpleasant look, smell and limits the diversity in the lake. These blooms have varying degrees of severity.

Urban lakes such as Virginia Lake can be affected by their high surface area to volume ratio and the generally nutrient-rich state of the surrounding environment. Plant nutrients and silt may still enter the lake margins during storm water run off events. Water which contains high levels of nutrients can result in increased growth of aquatic weeds and algae blooms.

The populations of waterfowl resident at the Lake also contribute to nutrient levels by transporting nutrient from their feeding sites into the water.

The water quality of Virginia Lake has been improved since the installation of a Solar Bee lake aeration device in December 2007. Whilst there has been a considerable reduction in the amount of toxic blue-green algae (cyanobacteria) blooms, rich algae populations are still present in the Lake.



Solar bee in operation at Virginia Lake

Landscape Management

In addition to the lake itself and as described in the Physical/Landscape Characteristics of this reserve management plan, Virginia Lake reserve can be divided into two areas; these being the Southern Activity Area (recreation/facilities) and the Northern Activity Area (natural environment) which can be further broken down into three broad areas. These being the parkland character area, the conifer plateau area, the mixed woodland area.

The differences between these areas need maintaining. The Parkland area carries a strong “Victorian like” landscape focusing on the band rotunda and the water garden area. The Conifer area at the northern end of the reserve has high ecological and conservation values and incorporates the Tiki Canoe Memorial, which is a notable feature of the area. The third area is the Mixed Woodland, which includes many fine deciduous trees, with striking seasonal variations particularly during autumn months.

An arboricultural assessment of the landscape of Virginia Lake including the health and condition of existing mature trees was carried out by Bryan Gould in 2006. The landscape was found to face several profound challenges from a sustainability perspective which need to be addressed to ensure the long term health and viability of the tree collection. The report prepared concluded that a *“pro-active and progressive works programme is required to make changes and improvements that will manifestly restore the tree collections and lay the foundation for a new era of sustainable growth within a re-vitalised reserve.”*

3.4 Wildlife Management and Protection

Fishing at the Lake

Virginia Lake was once stocked with trout by Fish and Game New Zealand which has a statutory mandate to manage New Zealand's fresh water sports fish fisheries and game bird hunting. Virginia Lake was listed in the sports fishing regulations as a fishery for both trout, and the perch that were illegally introduced into the lake some years ago.

The Lake has been a popular fishery, especially with younger anglers and has been used as a venue for an annual “Kids Fishing Day”. In 1989 the Wanganui Acclimatisation Society were granted planning consent by the former Wanganui City Council to site a fishing pontoon near the south-eastern entrance to the Lake. At the time it was thought that the pontoon would enable members of the public access to the water's edge for fishing purposes thereby allowing more active utilisation of the reserve.

However numbers of wildfowl around the lake have increased with a corresponding increase in the number of incidents of birds being injured by fish hooks and caught up in fishing line, and the Wanganui District Council, and Fish and Game have decided the Virginia Lake is no longer suitable as a fishery. On 14 February 2009, in the interests of the large number of wildlife now present on the lake and in order to

minimise any conflict between wildlife, the public and anglers, the Taranaki Fish and Game Council passed a resolution to the effect that Virginia Lake be deemed a closed water for sports fishing.

The fishing pontoon was removed from the Lake in 2008.

Wild Life Populations

A variety of bird species inhabit Virginia Lake Reserve including ducks, geese, swans, pukekos, shags and other waterfowl. The numbers of some of these species has grown relatively high, with associated problems. In particular the loss of former habitat due to recent substantial urban growth into the previously undeveloped areas to the north and west of Virginia Lake has resulted in the reserve becoming increasingly populated with Pukekos. In large numbers they have the potential to be highly destructive to both flora and other wild fowl, especially during the breeding season.

The shag colony which has largely relocated to the western side of the lake also appears to be growing, creating odour issues in the vicinity of their roosting area.

The Council has introduced several breeding pairs of pinioned mute (white) swans into Virginia Lake. Successful breeding of the mute swans is likely to require investment in secure, predator proof, roosting and nesting zones.



Pair of Mute Swans on Virginia Lake

3.5 Cultural Resources/Heritage

Cultural and Historical Values

Recognition of the cultural and historical values of Virginia Lake reserve provides the solid foundation and framework to which responses to the changing environment can be based on. The Historic Places Act 1993 also requires the Wanganui District Council to keep a record of historic resources to ensure where possible that any future development does not compromise these values. Appendix A of the District Plan

entitled “Heritage Resources”, lists the following items situated within Virginia Lake reserve as features of historical and archaeological value:

ID NO	DESCRIPTION AND MAP SHEET	SOURCE REFERENCE	TYPE
84	Lake Virginia dune dammed lake [C3] Brassey Road U9	Inventory of important geological sites and landforms in the Wanganui area	V/N
92	Winter Gardens Bldg, Virginia Lake U9	Wanganui Historic Places Trust (unregistered)	H/C/A
93	Pump House, Virginia Lake U9	Wanganui Historic Places Trust (unregistered)	H/C/A
94	Higginbottom Fountain, Virginia Lake U9	Wanganui Historic Places Trust (unregistered)	H/C/A
95	Statue of Tainui, Virginia Lake U9	Wanganui Historic Places Trust (unregistered)	H/C/A
96	Gates at entrance to Virginia Lake from Virginia Road U9	Wanganui Historic Places Trust (unregistered)	H/C/A



Former Pump House at south-eastern entrance of Virginia Lake

3.6 Recreational Access, Use and Activities

Access

Virginia Lake provides a premier open space for the residents of Wanganui and surrounding District. The importance of physical and visual linkages both within the reserve and to the surrounding environment particularly Great North Road should be recognised and these linkages enhanced.

Use and Activities

The primary purpose of Virginia Lake is as a casual, unstructured recreation area with an emphasis on casual passive recreation. Whilst regular long-term organised uses of

the reserve would significantly impact upon the public's right to use the reserve on a casual basis there is some ability to make provision for some organised community events. In addition limited commercial use of the facilities can enhance user experience such as the paddle boats and Reflections Café.

Activities undertaken within the reserve have the potential to impact on the health and wellbeing of the natural environment, park user experience, and residents living in close proximity to the reserve.

3.7 Facilities, Structures and Paths

Outdoor Furniture

Picnic tables are provided at the south eastern entrance of the reserve in the vicinity of the former pump house. They are also provided adjacent to the children's playground together with a barbeque. Seats are provided at various locations throughout the reserve. Providing eating and seating facilities at reserves can add value to the users experience however if inappropriately placed or designed can have an adverse impact on amenity or be subject to vandalism.

Barbeques and outdoor seating facilities encourage people to eat at reserves which in turn create a demand for rubbish removal receptacles and associated servicing costs.



Picnic table adjacent to south-eastern entry

Play Equipment

A limited amount of children's play equipment is provided adjacent to the aviary and punch bowl area. The provision of a small amount of well-maintained play equipment enables maximum public use and enjoyment of the reserve for families but should not take precedence over the reserve's function as a scenic landscape reserve.

3.8 Information, Promotion and Education

The provision of interpretive facilities, services and information has the potential to enhance visitor experience within the reserve and to increase visitor understanding and appreciation of the natural, historic and cultural values of Virginia Lake.

3.9 Community Relationships

Ongoing consultation and work with groups such as the Virginia Lake Trust, the Wanganui Botanical Group, other agencies, iwi, hapu, and the community assists in providing cohesive, effective and meaningful management of the reserve.

4. VISION AND MANAGEMENT OBJECTIVES

4.1 Introduction

The vision statement and objectives for Virginia Lake identify what is important about the reserve and how management, planning and development will seek to preserve and enhance the amenity, recreational and educational values of the reserve.

The policies in the Management Plan are the means by which the vision and objectives will be achieved.

4.2 Vision Statement

The Virginia Lake Reserve's outstanding scenic and park like characteristics provide for the well-being and enjoyment of the people of Wanganui and visitors to the District while at the same time supporting a valuable habitat for wildlife within the Wanganui urban area.

4.3 Objectives

Administration

- To ensure that all relevant statutory and bylaw requirements pertaining to the reserve are met.
- To ensure that all land parcels comprising Virginia Lake will be protected under the Reserves Act 1977.

Landscape Management and Protection

- To continue to develop and manage vegetation in the park in context with the surrounding environment.
- To ensure that individual characteristics of the different Landscape Character areas, including the Lake and the quality of its water, are safeguarded and enhanced.
- To provide long-term landscape amenity through the replanting of selected trees and other plants.

Wildlife Management and Protection

- To ensure the sustainable management of the reserve for wildlife conservation.

Cultural Resources/Heritage

- To protect and enhance structures and sites within the reserve that make a significant contribution to heritage and amenity values.
- To recognise the relationships of people, their history and culture when managing the use, enhancement and protection of the resources of the reserve.
-

Recreational Access, Use and Activities

- To provide freedom of access and entry to the reserve in such a manner that minimises the impact on the reserve's character and values.
- To maintain an emphasis on casual passive recreation while making provision for community and limited commercial use of the facilities.
- To avoid conflicts between incompatible recreational activities occurring within the reserve.
- To ensure that the use of the reserve does not adversely affect the health and wellbeing of the natural environment, park user experience, and residents living in close proximity to the reserve.

Facilities, Structures and Paths

- To ensure that the buildings and structures within Virginia Lake achieve their functional purpose without detracting from the overall character and landscape values of the reserve.
- To ensure that a network of pathways is provided and maintained to allow public access to all areas of Virginia Lake reserve.

Information, Promotion and Education

- To promote Virginia Lake as one of Wanganui's premier visitor attractions.
- To provide interpretive facilities, services and information to enhance visitor experience within the reserve and to increase visitor understanding and appreciation of the natural, historic and cultural values of Virginia Lake.

Community Relationships

- To acknowledge the importance of Virginia Lake to the community by working with the Virginia Lake Trust, other agencies, iwi, hapu, and the wider community to provide cohesive, effective and meaningful management of the reserve.

5. POLICIES

5.1 Administration – Policies

Objective To ensure that all relevant statutory and bylaw requirements pertaining to the reserve are met.

Objective To ensure that all land parcels comprising Virginia Lake will be protected under the Reserves Act 1977.

5.1.1 Classification

- All land in the Virginia Lake Reserve will be declared to be a reserve within the meaning of the Reserves Act 1977.
- The reserve will be managed in accordance with its classification under the Reserves Act.

Implementation

- Undertake the declaration and classification of the Virginia Lake Reserve under the Reserves Act 1977.

5.1.2 By-Laws

- The reserve will be managed in general accordance with the Wanganui District Council Consolidated Bylaws 1997.

5.1.3 Funding

- Funding for maintenance programmes, ongoing protection, development and enhancement programmes will be identified in Council's 10-Year Plan 2009-2019 and the Annual Plan.
- All programmes arising from this Management Plan will be prioritised and funded when opportunity or resources allow.
- Alternative sources of funding (other than rates) and other means of implementing programmes will also be considered.

5.1.4 Leases, Licences and Other Agreements

- Any current or future leases, licenses or other agreements entered into will be monitored and appropriately enforced.

5.1.5 Fees and Charges

- Fees for casual and commercial use shall be charged in accordance with Council's general policy on parks charging.

5.1.6 Sale of Liquor

- The sale and supply of liquor in the reserve will be controlled by Council by-laws.

Explanation

The consumption, sale or supply of liquor in the reserve has the potential to adversely impact on wildlife, reserve facilities, neighbours and other members of the public.

5.2 Landscape Management and Protection – Policies

<p>Objective To continue to develop and manage vegetation in the park in context with the surrounding environment.</p>

<p>Objective To provide long-term landscape amenity through the replanting of selected trees and vegetation.</p>

5.2.1 General Landscape Management

- Provide for the regeneration of the existing tree collection to ensure it remains viable.
- Protect and enhance those specimens of particular horticultural merit.

Explanation

The reserve has been over populated with sub-standard plants and trees, and in many cases these have been competing for space and natural resources. Poor plant health and vigour, serious structural defects, weed infestation, inadequate drainage and sub-standard maintenance practices have limited the potential of trees to operate at their best.

Recommended tree work is set out in the reports entitled "Arboricultural Assessment" 2006, "Tree Work Priorities" 2007 and

“Targeted Tree Work Proposals” 2009 as prepared by Bryan Gould. At the same time consideration needs to be given to the overall value of individual trees within the collection.

Implementation

- Compile and maintain an inventory of trees within the reserve based on the List of Vascular Plants of Virginia Lake Reserve, prepared by the Wanganui Botanical Group and attached at Appendix 2.
- The trees in the reserve that have been identified as acceptable and which represent valuable specimens that make a positive contribution to the collection and landscape are to be retained and to form the framework for future landscape developments.
- Pro-active arboriculture work in the form of remedial work or removal is to be undertaken on trees identified as hazardous, unsuitable or moribund.
- A programme for the removal and ongoing control of aggressive and smothering herbaceous and woody weeds is to be implemented and maintained.
- Storm water outlets from neighbouring properties which currently discharge into the reserve are to be terminated or piped especially those which cause unacceptable scouring and erosion.
- Seepage into open ground which can cause water-logging and saturation inhibiting root oxygen absorption by tree roots and leading to root death and tree destabilisation is to be avoided.
- All landscape work is to be carried out in accordance with accepted arboricultural practices.

Objective To ensure that individual characteristics of the different Landscape Character areas, including the Lake and the quality of its water, are safeguarded and enhanced.

5.2.2 Management Areas

- In addition to the Lake itself, Virginia Lake Reserve will have two main activity areas which will provide the basis and framework for the ongoing management and enhancement of the reserve. These areas are:
 - **The Northern Landscape Character Area** - Will be managed primarily as a wildlife habitat whilst maintaining high visual landscape qualities and providing a distinctive scenic backdrop and setting for Virginia Lake. The northern activity area will be subdivided into a further three main landscape character areas as follows:
 - (ii) **Parkland area**
 - (iii) **Conifer plateau area**

(iv) **Mixed woodland area**

- **The Southern Landscape Character Area** – All reserve facilities and major recreational activities will generally be confined to the southern activity area.

Explanation

The management areas reflect the special and specific characteristics and activities occurring within each area. Each of the landscape character areas require specific management techniques to ensure the maintenance and enhancement of their character and amenity. The landscape areas are described in greater detail in the Physical/Landscape Characteristics section of this Management Plan.

Implementation

Virginia Lake will be managed as two distinct activity areas as outlined by the Virginia Lake Reserve Strategic Planning Review 2004 prepared by Boffa Miskell Ltd, and as set out in 5.2.3 - 5.2.6 below.

5.2.3 The Parkland Landscape Character Area

- The parkland area be managed as a “Victorian like” landscape focusing on the band rotunda and the water garden area as major landscape features.

Explanation

The landscape character of the parkland area is different to both the conifer plateau area and the mixed woodland area. Within the parkland area the trees generally tend to be seen as individual specimens and often appear in open surround with little or no secondary growth or underplanting. The band rotunda, the twin bridges, the rose walkway, the spring garden and the peace garden are important features in this area.



Band Rotunda erected to commemorate the coronation of King George V. and Queen Mary.

Implementation

- Understory plantings generally are to be discouraged within the parkland area in order to maintain the area as an open parkland-like landscape.
- Trees not integral to the parkland theme, such as self-seeded specimens are to be removed and replaced, where necessary, with more appropriate species.
- Specimen tree work focusing on form, structure and health to be carried out on a regular basis by skilled arborists.
- Selective clearance of lake edge vegetation adjacent to the water garden and the band rotunda are to be carried out in order to facilitate and enhance views.
- The lower level lake side walk within the parkland character area to be increased in width in order to provide a more pleasant and appropriate walking environment.
- At strategic locations, views to the lake from walkways within the parkland area be opened up by the selective removal or thinning of lake side vegetation.
- The twin bridges water garden be redeveloped to provide a more direct and stronger visual relationship with Virginia Lake.
- The spring and peace gardens be integrated and upgraded as a feature garden focusing on the entry to the reserve from Brassey Road.
- Other work recommended by the document entitled “Targete Tree Work Proposals”2009 prepared by Bryan Gould.



Water Garden situated in Parkland Landscape Character Area

5.2.4 The Conifer Plateau Landscape Character Area

- The predominant conifer theme of the Conifer Plateau landscape character area is to be retained.

Explanation

The conifer plateau comprises conifer plantings including individual specimens located on a broad flat plateau adjacent to the Virginia Road entry to the reserve. The peninsula like landform, where the Tiki Canoe Memorial was previously sited, is a notable feature of this area.

Implementation

- Understorey plantings are to be discouraged within the Conifer Plateau in order to retain the predominant conifer theme.
- Selective thinning and removal of undergrowth, particularly self seeding and garden escape varieties.
- A semi informal vegetation edge to the lake to be maintained in this area to provide a transition between the parkland and mixed woodland character areas.
- A new pedestrian link between the Virginia Road and the former Tiki Canoe Memorial site be investigated.
- The return of the Tiki Canoe Memorial to its original site be investigated.
- Other work recommended by the document entitled “Targeted Tree Work Proposals” 2009 prepared by Bryan Gould.



Former Tiki Canoe Memorial Site in Conifer Plateau Area

5.2.5 The Mixed Woodland Landscape Character Area

- The mixed woodland character of the area is to be retained including the use of deciduous trees as accents for autumn colour.

Explanation

The mixed woodland area comprises a dense cover of mixed trees including native, wetland plantings and deciduous trees as well as a relatively extensive undergrowth. The maintenance and enhancement of the character of this area improves spatial definition from other areas within the reserve.

Implementation

- The selective thinning and removal of woody weed specimens is to be carried out as appropriate.
- Selective tree removal or pruning to be carried out.
- Investigate the development of the wetland area, including boardwalk, in the vicinity of the Swamp Maire tree.



Weir Bridge and wetland planting in Mixed Woodland area.

5.2.6 The Southern Activity Area

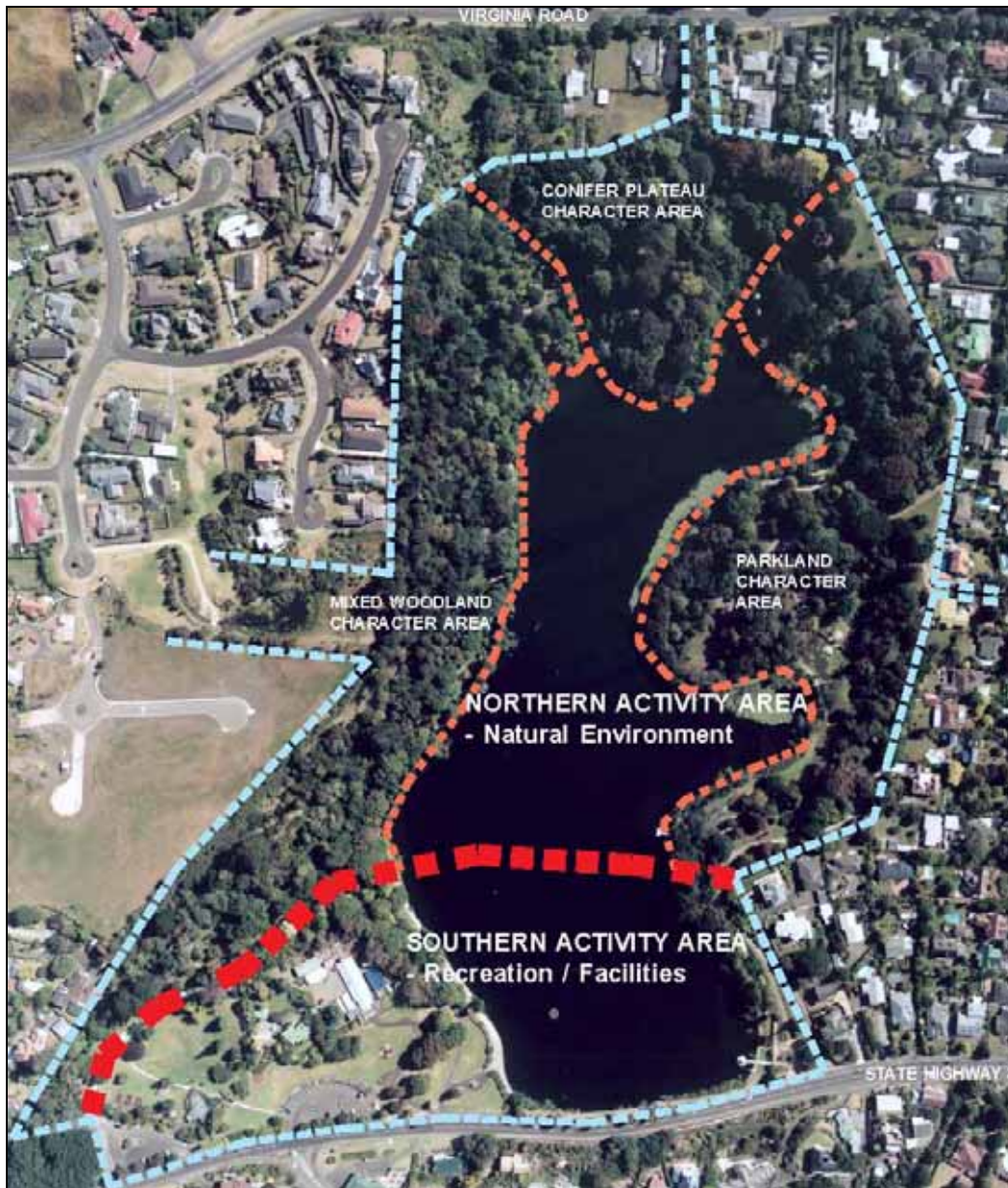
- The southern activity area will continue to provide the main entry points and car park for the reserve, the main focus for visitors, and act as a buffer or filter to the more natural northern area.

Explanation

The southern activity area is the most modified and developed area of the reserve containing the winter gardens, café, aviary, children's playground, duck feeding and picnic areas and other visitor facilities.

Implementation

- Restore the rock garden area on the south eastern area of the lake.
- Establish and maintain screen and amenity planting between State Highway 3 and the boardwalk.
- Investigate resurfacing and edge treatment along the paved edge of the pond in the main duck feeding area on the western side of the Lake.
- Investigate the provision of an Interpretation Centre.
- Review the Reserve depot and service area.
- Investigate the provision of further car parking in the vicinity of the gully between Kawau Place and the State Highway.



Map 2 Landscape Character Areas – Courtesy of Boffa Miskell, prepared Feb 2004

5.2.7 Damage to or Removal of Plant Material

- Unauthorised damage to or removal of plant material is prohibited except for park management purposes.

5.2.8 The Lake and Water Quality

- Council will continue to implement strategies to improve the water quality and natural values of Virginia Lake.

Explanation

Virginia Lake, due to its high nutrient input from various sources and minimal stormwater inflow and therefore outflow, has become eutrophic. The high nutrient concentration provides food for many micro-organisms, but the still conditions in the lake have resulted in blue-green algae species such as Anabaena having a survival advantage and out-competing other organisms. A report prepared by NIWA 2004 found that Virginia Lake was in poor health.

Implementation

- Continue the use of the SolarBee which circulates the water in the lake preventing the still water situation which favours development of blue-green algae concentrations.
- Obtain resource consent from Horizons to enable flushing of the Lake involving the direction of stormwater run-off from Rotokawau and Great North Road into the lake. Oxygenated water with nutrient levels lower than lake water will be discharged into about eight metres depth and will displace water at 14 to 16 metres depth containing no oxygen and high levels of nutrients. The displaced lake water will be discharged into the Whanganui River via the existing stormwater drainage network.
- Floating Islands installed in stagnant areas of lake.
- Clearance of undesirable vegetation from lake margins and replanting with more suitable species.
- Control high nutrient level seepage along a short stretch of the north-western lake margin through the installation of an Interceptor Wall.
- Investigate using artificial shag rookery to extract nutrients from water.
- Investigate introduction of filter feeders such as silver carp.

5.3 Wildlife Management and Protection – Policies

<p>Objective To ensure the sustainable management of the reserve for wildlife conservation.</p>

5.3.1 Identification, Protection and Enhancement of Wildlife

- Define and protect specific habitat conservation and water bird refuge areas, particularly those inhabited by the white swan.

- Native and exotic plantings will be used to encourage native birds and other valued wildlife into the Virginia Lake reserve.
- Virginia Lake's bird life populations will be maintained at suitable levels through ecologically sensitive relocation.

Explanation

The ongoing development and maintenance of the Landscape Character Areas needs to be balanced with the fundamentally important role of the reserve in providing natural habitats for Wildlife. On the other hand the loss of habitat due to recent rapid residential development into the previously undeveloped areas to the north and west of Virginia Lake has resulted in the reserve becoming increasingly populated with Pukekos. In large numbers and with limited natural food supply available they have the potential to be highly destructive to other wildlife, especially during the breeding season, and to unprotected newly planted vegetation.

Implementation

- An ecological assessment will be carried out to investigate ways to improve and enhance the reserve as a wildlife habitat.
- The numbers of duck, geese, swan, shags and pukekos resident at the lake will be regularly monitored and recorded.



Pukeko at Virginia Lake

5.4 Cultural and Heritage Resources – Policies

Objective To protect and enhance structures and sites within the reserve that make a significant contribution to heritage and amenity values.

Objective To recognise the relationships of people, their history and culture when managing the use, enhancement and protection of the resources of the reserve.

5.4.1 Protected Trees

- Where appropriate include in the District Plan's register of trees those trees within the reserve that are considered to possess aesthetic, cultural, historic, scientific, spiritual significance or values.

Explanation

Currently there are no trees listed as protected trees in Appendix B of the Wanganui District Plan. The District Plan recognises the value of notable trees as community assets and has adopted a system of identifying notable trees as worthy of recognition and protection.

Implementation

- Undertake an assessment of the tree collection to determine if any trees meet the criteria for inclusion in the District Plan's list of Protected Trees.

-

5.4.2 Heritage Buildings/Structures

- Virginia Lake's Maori and European cultural and historical sites or objects of importance will be preserved and managed in accordance with the District Plan, the Council's Asset Management Programme, and other relevant statutory and regulatory requirements.

Explanation

All heritage features within the reserve need to be identified and accorded the appropriate level of protection to ensure preservation for the enjoyment and education of the public.

Implementation

- Undertake an assessment of the heritage features in the reserve to ensure they have the appropriate level of protection in the Wanganui District Plan and by the Historic Places Trust.



Tainui Statue

5.4.3 Accidental Discovery Protocol

- If any archaeological sites are uncovered during physical works within the reserve, the Wanganui District Council will require the contract manager to adopt the following protocol:
 - Work shall cease immediately at that place.
 - The contractor must shut down all machinery, secure the area and advise the contract manager.
 - The contract manager shall notify the Central Region Archaeologist of the New Zealand Historic Places Trust and if necessary the appropriate consent process shall be initiated.
 - The contract manager shall notify the relevant iwi groups to determine what further actions are appropriate to safeguard the site or its contents.
 - If skeletal remains are uncovered the contract manager shall advise the Police.
 - works on the site shall not resume until the New Zealand Historic Places Trust, the Police (if skeletal remains are involved) and local Tangata Whenua have each given the appropriate approval for work to continue.
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5.5 Recreational Access, Use and Activities - Policies

Objective To provide freedom of access and entry to the Reserve in such a manner that minimises the impact on the reserve's character and values.

5.5.1 Access – Pedestrian and Vehicular

- The public are generally permitted unrestricted foot access to the reserve at all times unless there is a notice to say otherwise for management purposes such as tree maintenance or removal or at times of storm damage. Once the Reserve is classified under the Reserves Act 1977, any restrictions will be in accordance with the Act.
- Vehicular access to the Reserve will be restricted to contractors and Council vehicles, with limited access available to wedding parties.

5.5.2 Wheelchair Access

- Disabled access ways within the Southern Activity Area shall be provided, wherever possible, to the standards set down in “NZS 4404:2004 Land Development and Subdivision Engineering” and the Wanganui District Council Companion Document.
- Disabled access ways in all other parts of the reserve shall conform to “SNZ HB 8630:2004 Tracks and Outdoor Visitor Structure Standard”.

Objective To maintain an emphasis on casual passive recreation while making provision for a limited and sustainable level of organised community and commercial use of the facilities.



'Fantasia by the Lake' display in the Winter Gardens

5.5.3 Special Events and Commercial Use of Reserve

- To provide for limited forms of commercial activity and short-term organised community events within Virginia Lake for the convenience and enjoyment of users and visitors.
- Commercial activities within the reserve must be compatible with the reserve's character and values.

Explanation

Commercial activities located within the Virginia Lake Reserve include Reflections Café which operates from the former custodian's house and a pedal boat hire business which operates from the paved area adjacent to the pump house gazebo on the southeast corner of the lake. These activities were both subject to resource consent applications under the Resource Management Act 1991 and were granted consent on the basis that the scale of the operations would have little if any adverse effect on the amenity value of the environment.

Implementation

To assess proposals for commercial activities or organised community events on a case-by-case basis taking into account relevant factors including:

- Relevant Council policies, strategies, bylaws and other legislative and regulatory requirements including District Plan provisions.
- Compatibility with the character and values of Virginia Lake.

- Impact on the ability of the public to use the reserve on a casual basis.
- The period of time the reserve or any part of it will be committed to organised usage.
- The possible generative effects of the proposed new use, in particular those relating to noise transmission and traffic generation.



Reflections Café in Southern Activity Area

<p>Objective To avoid conflicts between incompatible recreational activities occurring within the reserve.</p>

5.5.4 Dogs

- Dogs are prohibited from all areas of Virginia Lake Reserve under the Wanganui District Council Consolidated Bylaws 1997 – Part 12.

Explanation

Animals that are not well managed can impact adversely on wildlife that are established in the reserve. Many instances of dogs chasing and catching birdlife have been reported to Council Officers.

5.5.5 Cycling

- Cycling is not permitted within the Virginia Lake reserve.

Explanation

The width and contour of the pathways means that informal recreation activities such as cycling, jogging and walking have the potential to cause conflict.

5.5.6 Fishing

- All forms of fishing are not permitted within Virginia Lake.

Explanation

Although recreational fishing has been permitted in the past it has been found to be incompatible with the use of the reserve as a wildlife sanctuary and scenic reserve.

5.5.7 Swimming

- Swimming, which is not part of an organised sporting event, is not encouraged within Virginia Lake reserve.

Explanation

Recreational swimming is not compatible with the use of the reserve as a wildlife sanctuary and scenic reserve.



Swimmers at Virginia Lake

Objective To ensure that the use of the reserve does not adversely affect the health and wellbeing of the natural environment, visitor experience, and residents living in close proximity to the reserve.

5.5.7 Litter

- Rubbish bins will be provided predominantly in the southern activity area and will be kept to a minimum.

- Where picnic areas are developed consideration will be given to the placement of rubbish bins.
- People will be encouraged to keep the park tidy through information brochures and appropriately placed signage.
- Event organisers will be responsible for the removal of rubbish during and upon completion of events.
- The standards of litter management will be monitored to ensure the reserve remains clean and tidy.

Explanation

Rubbish bins are a necessity in the southern activity area as this area contains the main entry points to the reserve and the main activity features such as the Winter Gardens, aviary, punch bowl, fountain, picnic areas and duck feeding areas. The presence of rubbish bins in the more 'passive' northern landscape area would tend to detract from existing scenic and wildlife values. In addition the relatively low use of rubbish bins in this area would not support the considerable establishment and maintenance costs.

5.6 Facilities, Structures and Paths – Policies

Objective	To ensure that the buildings and structures within Virginia Lake reserve achieve their functional purpose without detracting from the overall character and landscape values of the reserve.
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5.6.1 Buildings and Structures

- Council will continue to maintain all facilities including public toilets, picnic tables and park furniture to a safe and adequate standard appropriate to their use.

5.6.2 The Aviary

- The Aviary shall continue to be maintained at a high level and upgraded as necessary for the enjoyment of the public without compromising the welfare of the collection of birds that it houses.

Explanation

The aviary is an historic amenity within the reserve that continues to provide an area of interest to the public.

Implementation

- Council will continue to maintain a varied and interesting collection of birds at the aviary.
- Provision shall be made to ensure that the welfare of the birds is adequately catered for at all times.

5.6.3 Winter Gardens

- All work carried out on the Winter Gardens building, whether repair, maintenance, restoration or adaptation, shall follow the rules set down in the Wanganui District Plan for heritage features including the conservation principles set out in the *ICOMOS Charter for the Conservation of Places of Cultural Heritage Value*.

Explanation

The Winter Gardens were erected in 1940 as Wanganui District's commemoration of the signing of the Treaty of Waitangi in 1840. The building has important historic and cultural value and is a registered feature in the Wanganui District Plan's Heritage Inventory.



Winter Gardens

5.6.4 Park Furniture

- Seating shall be provided at major viewpoints along the upper and lower walkways within the Parkland and Mixed Woodland Landscape Character Areas. Care shall be taken to minimise visual distraction from the natural environment.
- All new furniture and existing structures that are due for attention on the routine maintenance programme should be reviewed to ensure that their visual impact is minimised and they are appropriate in terms of function, ease of maintenance and the reserve's premier park status.

Explanation

A diverse range of furniture styles had been established in the reserve over many years. A unified design approach to all park furniture, located and maintained to meet the needs of users of the reserve, is essential to convey an image of quality inherent in a reserve of Premier status.

Implementation

- All new and replacement furniture shall be provided to the following specifications:
 - **Seating**
 - Southern Activity Area – Ethan wooden colonial style
 - Northern Activity Area – Steel-Mig – metal green
 - **Picnic Tables**
 - Play Area – Fel Group metal and wood
 - Remaining Areas – Fel Group solid metal
 - **Rubbish Bins**
 - All areas – Fel Group – wooden slat

5.6.5 Toilets

- Council shall investigate the re-siting of the public toilets on the south west side of the reserve from their present location adjacent to the lake.
- The toilets near the south-east entrance to the lake shall be upgraded to a safe and adequate standard appropriate to the reserve's use as a premier park.

Explanation

Toilet facilities need to be upgraded to meet the modern standards appropriate to families and visitors to the area. Currently only the toilets adjacent to the Winter Gardens have disability access.

5.6.6 Playground Facilities

- The Council shall continue to provide children's play equipment in the same location and at a similar scale.
- The existing playground equipment shall be maintained at a high level and upgraded as necessary to meet the recreational and safety needs of users.

Explanation

Virginia Lake Reserve is not a destination playground area and there is limited space available for further development. Therefore the scale of the children's playground shall be maintained in line with that of a neighbourhood reserve. Regular maintenance will ensure that New Zealand Safety Standards continue to be met.



Children's playground in Southern Activity Area

Implementation

The following NZ standards will apply when constructing or reviewing play equipment:

- SNZ HB 5828: 2001(Int) Sections 6–12 play equipment design, type and construction.
- AS/NZS 4422: 1996 “Playground surfacing – Specifications, requirements and test method”.
- AS/NZS 4486 “Playgrounds and Playground Equipment Part One: 1997 Development, installation, inspection, maintenance and operation”.

5.6.7 Barbecue Facilities

- The existing barbecue equipment shall be maintained at a high level and upgraded as necessary to meet the recreational and safety needs of users.

Explanation

The existing barbecue area by the punchbowl meets the requirements of users.



Map 3 Existing Focal Points – Courtesy of Boffa Miskell, prepared Feb 2004

5.6.8 Carpark

- Provide an additional area for future bus and car parking

Explanation

Additional car parking is necessary as the demand for car parking in the main carpark and the Babbage Place carpark often exceeds supply. A purpose built bus park on the eastern side of the existing car park is

likely to be underutilised and to adversely impact on the visual amenity of the Virginia Lake frontage through the removal of existing trees.

Implementation

- Investigate the partial filling of the gully alongside Babbage Place to provide an area for future integrated bus and car parking.

Objective To ensure that a network of pathways is provided and maintained to allow public access to all areas of Virginia Lake reserve.

5.6.9 Paths and Boardwalk

- Where possible path surfaces shall reflect the character of the area they pass through and shall also reflect the level of usage the track receives.
- Asphaltting of pathways shall be limited to those situated within the Southern Activity Area.
- A hierarchy of pathways, within the three Northern Landscape Character Areas, will be implemented and maintained, in accordance with SNZ HB 8630:2004 – Tracks and Outdoor Visitor Structures.
- Where possible the primary pathway is to meet route criteria for disabled access in accordance with current New Zealand Standards.

Explanation

Pedestrian access and circulation within Virginia Lake Reserve needs to be appropriate, safe and certain in the way in which it is provided, maintained and used. Upgraded or new pathway development can enhance the visual amenity of existing natural and scenic features within the reserve.

Implementation

- Investigate the redevelopment of the former Tiki Canoe Memorial site and ensure good connections with existing pathways.
- The steps and lower landing area connecting the former Tiki Canoe Memorial site and the lower level lake side walkway will be upgraded.
- The development of the wetland area, including boardwalk, in the vicinity of the Swamp Maire tree and the weir bridge will be investigated.
- The pathway linking the southeast entrance with the existing toilets to be upgraded. This will be done in either asphalt or concrete.

- Upgrade the walkway between the Tainui statue and the boat ramp on the western side of the lake.

5.6.10 Lighting

- An appropriate level of security and feature lighting shall be provided for the safety, convenience and enjoyment of visitors to Virginia Lake.

Explanation

Lighting can be used to improve safety and security levels within the reserve and to enhance the visitor experience by highlighting features of historical, scientific or amenity value.

Implementation

- Upgrade and maintain adequate security lighting to car park areas to enable safe night time use of this area of the reserve.
- Upgrade the decorative and feature lighting in the vicinity of the Winter Gardens, and the Tainui Statue.
- Install feature lighting to the Band Rotunda to highlight its character and significance.
- When considering future lighting for the reserve, Crime Prevention Through Environmental Design (CPTED) principles will be taken into account.

5.7 Information, Promotion and Education – Policies

Objective To provide interpretive facilities, services and information to enhance visitor experience within the reserve and to increase visitor understanding and appreciation of the natural, historic and cultural values of Virginia Lake Reserve.

5.7.1 Information and Interpretation

- Use of the reserve as an education facility for schools, and the general public will be encouraged.
- Brochures/leaflets containing directional information, histories, maps and information on significant trees, structures, and other points of interest around the lake will be progressively improved and extended.
- Information to be provided to the public regarding the current and proposed landscape improvements.

Virginia Lake Restoration

The Problem: The lake contains Blue-Green Algae

Below are the issues which are contributing to the presence of Blue-Green Algae

- Invasive plants**
Invasive plants provide an additional nutrient source.
- Stagnant water**
Stagnant water provides a breeding ground for Blue-Green Algae.
- Underground seepage**
Much untreated ground water seeps into the lake.
- Presence of P perch**
Perch provide an environment which favours the algae.
- Accumulated nutrients**
A continual source of food for the Blue-Green Algae.

What is Blue-Green Algae?

Blue-Green Algae are bacteria. They are commonly found in fresh water, usually in low concentrations. However, under certain conditions they multiply at such a rate that they dominate the aquatic environment. This is called a 'bloom'. Blooms can affect water quality by:

- forming scum on the surface
- causing unpleasant smells
- making toxins in the water
- turning water a bright yellow-green colour
- making swamps in deeper water
- producing foam

Corrective Action:

Started November 2007

- Removal of invasive plants** (see the Silver Flag 2)
- Surface circulation/aerator** (this can be used with other things)

Further actions currently under investigation:

- Interwater wall** (to prevent water from flowing into the lake)
- Flushing intensity** (to prevent water from flowing into the lake)
- Flushing interwater** (to prevent water from flowing into the lake)
- Introduce Elodea** (to prevent water from flowing into the lake)

The total cost to rebalance the ecosystem of Virginia Lake **\$637,000.00**

Signage installed at Virginia Lake to explain Restoration Project

- Interpretative signage shall be installed where appropriate to provide information on the reserve's natural, historic and amenity features.
- On-site interpretation, such as volunteer run guided walks, will be encouraged and developed over time as part of visitor information and development of the area as an education resource.

Explanation

Accurate, up-to-date, and widely available information about the reserve is essential if it is to be fully utilised by the local community, visitors to the area and used to its full potential as an education resource.

5.7.2 Signage

- Council shall provide the minimum amount of signage necessary to ensure the effective communication of park related, public information identification, directions, rules and regulations.
- All signs and information boards will be designed to the standard and style that Council has developed for Virginia Lake reserve.

Explanation

The potential for signage to detract from the visual amenity of the reserve needs to be balanced with the need to provide visitor information and interpretation about the Reserve's facilities and features and to help promote public safety and enjoyment.

Explanation

- Signage shall be installed on some walking tracks to indicate approximate walking times/distances.
- Interpretative signage shall be installed in appropriate locations to provide information on wildlife and features of interest.

Objective	To promote Virginia Lake as one of Wanganui's premier visitor attractions.
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5.7.3 Marketing

- Virginia Lake shall be actively promoted as a premier destination for visitors to Wanganui, through information made available to tourism publications and other tourism promotion organisations.

5.8 Community Relationships

Objective	To acknowledge the importance of Virginia Lake to the community by working with the Virginia Lake Trust, other agencies, iwi, hapu, and the wider community to provide cohesive, effective and meaningful management of the reserve.
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5.8.1 Virginia Lake Trust

- The Virginia Lake Trust is recognised as a beneficial community advocate for the Reserve.

Explanation

The Virginia Lake Trust was formed in 1998, with the aim of promoting and supporting positive conservation and development initiatives related to the management and maintenance of the reserve.

Implementation

- Council will consult with the Virginia Lake Trust on issues concerning Virginia Lake.
- Council will appoint a Council officer to provide liaison with the Virginia Lake Trust.

5.8.2 Other Agencies

- The Council will establish and maintain effective working relationships with external organisations through participatory research, communication and co-operation on issues of common interest.

Implementation

- Council will liaise with appropriate horticultural groups and societies to enable their expertise and knowledge to be resourced for the management of the plant collection.

5.8.3 Tangata Whenua, Iwi and Hapu

- The Council shall recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, Wahi Tapu and other taonga, in the management of Virginia Lake.

Implementation

- Council will consult with the iwi and hapu regarding any historic or cultural use of the reserve that needs to be taken into account in the management of Virginia Lake.

5.8.4 The Community

- The Council will encourage community participation in the management, protection and development of the reserve.

5.8.5 Adjacent Landowners

- The Council will consult with adjacent landowners on matters of mutual concern relative to Virginia Lake Reserve.

6. Monitoring Programme

- Council will develop and implement a monitoring programme to assess environmental outcomes from management policies.

Explanation

Reserve Monitoring provides a means of identifying if changes to the management plan are required in order to ensure the objectives of the plan are being met.

Implementation

- Prepare monitoring plan identifying specific monitoring methods.
- Undertake monitoring and survey work prior to changes in management in relevant areas including wildlife, vegetation, and progress of lake restoration project.
- Undertake analysis and reporting against objectives and policies.

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APPENDIX 1

Schedule of Actions Arising From Virginia Lake Reserve Management Plan

Schedule of Actions Arising From Virginia Lake Reserve Management Plan

Administration	
5.1.1 Classification	<ul style="list-style-type: none"> - Undertake the declaration and classification of the Virginia Lake Reserve under the Reserves Act 1977. - Undertake a survey of the parcels included in the Virginia Lake Reserve to provide an updated legal description and title.
Landscape Management and Protection	
5.2.1 General Landscape Management	<ul style="list-style-type: none"> - Compile and maintain an inventory of trees within the reserve. - Valuable specimen trees that make a positive contribution to the collection and landscape are to be retained to form framework for future landscape developments. - Remedial work or removal is to be undertaken on trees identified as hazardous, unsuitable or moribund. - Implement an ongoing programme for the removal and ongoing control of aggressive and smothering herbaceous and woody weeds. - Storm water outlets from neighbouring properties which currently discharge into the reserve are to be terminated or piped especially those which cause unacceptable scouring and erosion. - Seepage into open ground which can cause water-logging and saturation inhibiting root oxygen absorption by tree roots and leading to root death and tree destabilisation is to be avoided. - All landscape work is to be carried out in accordance with accepted arboricultural practices.
5.2.1 Management Areas	<ul style="list-style-type: none"> - Virginia Lake will be managed as two distinct activity areas as outlined by the Virginia Lake Reserve Strategic Planning Review 2004 prepared by Boffa Miskell Ltd.
5.2.3 The Parkland Landscape Character Area	<ul style="list-style-type: none"> - Understorey plantings generally are to be discouraged within the parkland area in order to maintain the area as an open parkland-like landscape. - Trees not integral to the parkland theme, such as self-seeded specimens are to be removed and replaced, where necessary, with more appropriate species. - Specimen tree work focusing on form, structure and health to be carried out on a regular basis by skilled arborists. - Selective clearance of lake edge vegetation adjacent to the water garden and the band rotunda are to be carried out in order to facilitate and enhance views. - The lower level lake side walk within the parkland character area to be increased in width in order to provide a more pleasant and appropriate walking environment. - At strategic locations views to the lake from walkways within the parkland area be opened up by the selective removal or thinning of lake side vegetation. - The twin bridges water garden be redeveloped to provide a more direct and stronger visual relationship with Virginia Lake. - The spring and peace gardens be integrated and upgraded as a feature garden focusing on the entry to the reserve from Brassey Road. - Other work recommended by the document entitled "Targete Tree Work Proposals"2009 prepared by Bryan Gould.
5.2.4 The Conifer Plateau Landscape Character Area	

- Understory plantings are to be discouraged within the Conifer Plateau in order to retain the predominant conifer theme.
- Selective thinning and removal of undergrowth, particularly self seeding and garden escape varieties.
- A semi informal vegetation edge to the lake to be maintained in this area to provide a transition between the parkland and mixed woodland character areas.
- A new pedestrian link between Virginia Road and the former Tiki Canoe Memorial site be investigated.
- The return of the Tiki Canoe Memorial to its original site be investigated.
- Other work recommended by the document entitled "Targete Tree Work Proposals"2009 prepared by Bryan Gould.

5.2.5 The Mixed Woodland Landscape Character Area

- Undertake selective thinning and removal of woody weed specimens.
- Selective tree removal or pruning to be carried out.
- Investigate the development of the wetland area, including boardwalk, in the vicinity of the Swamp Maire tree.

5.2.6 The Southern Activity Area

- Restore the rock garden area on the south eastern area of the lake.
- Establish and maintain screen and amenity planting between State Highway 3 and the boardwalk.
- Investigate resurfacing and edge treatment along the paved edge of the pond in the main duck feeding area on the western side of the Lake.
- Investigate the provision of an Interpretation Centre.
- Review the Reserve depot and service area.
- Investigate the provision of further car parking in the vicinity of the gully between Kawau Place and the State Highway.

5.2.8 The Lake and Water Quality

- Continue the use of the SolarBee to prevent concentrations of blue-green algae.
- Obtain resource consent form Horizons to enable flushing of the Lake involving the direction of stormwater run-off from Rotokawau and Great North Road into the lake.
- Floating Islands to be installed in stagnant areas of lake.
- Clearance of undesirable vegetation from lake margins and replanting with more suitable species.
- Installation of an Interceptor Wall.
- Investigate use of artificial shag rookery to extract nutrients from water.
- Investigate introduction of filter feeders such as silver carp.

Wildlife Management and Protection

5.3.1 Identification, Protection and Enhancement of Wildlife

- An ecological assessment will be carried out to investigate ways to improve and enhance the reserve as a wildlife habitat.
- The numbers of duck, geese, swan, shags and pukekos resident at the lake will be regularly monitored and recorded.

Cultural and Heritage Resources

5.4.1 Protected Trees

- Undertake an assessment of the tree collection to determine if any trees meet the criteria for inclusion in the District Plan's list of Protected Trees.

5.4.2 Heritage Buildings/Structures

- Undertake an assessment of the heritage features in the reserve to ensure they have the

appropriate level of protection.	
Recreational Access, Use and Activities	
5.5.3	<p>Special Events and Commercial Use of Reserve</p> <ul style="list-style-type: none"> - Determine the suitability of proposals for commercial activities or organised community events on a case-by-case basis against a set of relevant assessment criteria.
Facilities, Structures and Paths	
5.6.5	<p>Toilets</p> <ul style="list-style-type: none"> - Council shall investigate the re-siting of the public toilets on the south west side of the reserve. - Upgrade the toilets on the south-east side of the lake.
5.6.8	<p>Carpark</p> <ul style="list-style-type: none"> - Investigate the partial filling of the gully alongside Babbage Place to provide an area for future integrated bus and car parking.
5.6.9	<p>Paths and Boardwalk</p> <ul style="list-style-type: none"> - Implement and maintain a hierarchy of pathways, within the three Northern Landscape Character Areas. - Investigate the redevelopment of the former Tiki Canoe Memorial site and ensure good connections with existing pathways. - The steps and lower landing area connecting the former Tiki Canoe Memorial site and the lower level lake side walkway will be upgraded. - The development of the wetland area, including boardwalk, in the vicinity of the Swamp Maire tree and the weir bridge will be investigated. - The pathway linking the southeast entrance with the existing toilets to be upgraded. This will be done in either asphalt or concrete. - Upgrade the walkway between the Tainui statue and the boat ramp.
5.6.10	<p>Lighting</p> <ul style="list-style-type: none"> - Upgrade and maintain adequate security lighting to car park areas to enable safe night time use of this area of the reserve. - Upgrade the decorative and feature lighting in the vicinity of the Winter Gardens, and the Tainui Statue. - Install feature lighting to the Band Rotunda to highlight its character and significance.
Information, Promotion and Education	
5.7.3	<p>Signage</p> <ul style="list-style-type: none"> - Install signage on walking tracks to indicate approximate walking times/distances. - Interpretative signage shall be installed in appropriate locations to provide information on wildlife and features of interest.
Community Relationships	
5.8.1	<p>Virginia Lake Trust</p> <ul style="list-style-type: none"> - Council will consult with the Virginia Lake Trust on issues concerning Virginia Lake. - Council will appoint a Council officer to provide liaison with the Virginia Lake Trust.

APPENDIX 2

Vascular Plants of Virginia Lake Reserve, St John's Hill, Wanganui

* Picea abies [ID conf. by FRI in 1997 but specimen not kept]		
* Picea omorika (NZFRI 8458)		
* Picea smithiana	Morinda spruce	1
* Pinus canariensis?		
* Pinus muricata	bishop pine	1
* Pinus nigra ssp. nigra (NZFRI 22436)	Austrian pine	2
* Pinus patula	Mexican weeping pine	
* Pinus pinaster (NZFRI 22435)	maritime pine	1
** Pinus radiata	radiata pine	4
* Pinus wallichiana (NZFRI 22434)	Bhutan pine	1
* Podocarpus elatus (NZFRI 8390; 22438) [incl. earlier record of P. macrophyllus]		
* Podocarpus henkelii (NZFRI 23237 <i>died 2001, but another is present</i>)		
c Podocarpus totara	totara	2
b Prumnopitys ferruginea	miro	1
b Prumnopitys taxifolia	matai	
* Pseudotsuga menziesii	Douglas fir	1
* Sequoia sempervirens	(Californian) redwood	2
* Sequoiadendron giganteum	wellingtonia, "big tree"	2
* Taxodium distichum	swamp cypress (behind swamp maire)	
* Taxus baccata	yew	
* Thuja plicata	western red cedar	
* Thujopsis dolabrata	hiba [on 'canoe ridge' – has old label]	
2. <u>Monocot trees and shrubs</u>		
* Archontophoenix cunninghamiana	bangalow/picabeen palm	1
* Butia capitata	butia palm, jelly palm	1
c Cordyline australis	cabbage tree, ti kouka	
* Cordyline rubra [Australian]		
* Cordyline stricta [Australian]		
* Howea forsteriana	kentia palm	
* Livistona australis	cabbage or fan palm	2
** Phoenix canariensis	phoenix palm	3
b Rhopalostylis sapida	nikau palm	
* Ruscus aculeatus	butcher's broom	
* Syagrus romanzoffiana	queen palm (new June 2002 at new entrance gates)	
* Trachycarpus fortunei	Chinese windmill palm	2
* Washingtonia robusta	skyduster	1
3. <u>Dicot trees and shrubs</u>		
* Abelia x grandiflora	abelia	
** Acacia baileyana CHR	golden wattle, Cootamundra wattle	
** Acacia dealbata	silver wattle	1
** Acacia decurrens (NZFRI 22439; 22635)	green wattle	
* Acacia floribunda (NZFRI 22636)	white sally, sally wattle	1
* Acacia elata (NZFRI 22532)		1
* Acacia longifolia ssp. longifolia	Sydney golden wattle	
* Acacia maidenii (NZFRI)	Maiden's wattle	2
* Acacia mearnsii	black wattle	
* Acacia melanoxylon	Tasmanian blackwood	1
** Acacia paradoxa (NZFRI)	kangaroo acacia (1 seedling, removed for NZFRI)	
* Acacia prominens (NZFRI)	golden rain wattle, Gosford Wattle	
	[western top track]	
** Acacia schinoides (NZFRI 23252, NZFRI)	frosty wattle (2 labelled, stolen 2003)	
* Acacia sophorae	sand wattle	
* Acer palmatum	maple	1

*	<i>Acer pseudoplatanus</i>	sycamore	1
*	<i>Acmena smithii</i>	monkey apple	
**	<i>Aesculus hippocastanum</i> (CHR)	horse chestnut	1
*	<i>Agonis juniperina</i>	juniper myrtle	
c	<i>Alectryon excelsus</i> [top western track near <i>Waterhousea</i> or by <i>Archontophoenix</i>]	titoki	
*	<i>Allocasuarina torulosa</i> (NZFRI 22433)	forest oak; rose she-oak	1
*	<i>Allocasuarina verticillata</i> (NZFRI 22432, 22469)	drooping sheoak	1
*	<i>Alloxylon pinnatum</i> (syn. <i>Oreocallis pinnata</i>) (NZFRI ; AK) [The only tree was felled sometime between 2005-2008]	Dorrigo waratah [fls. 3/12/01]	1
**	<i>Alnus glutinosa</i>	alder	2
*	<i>Angophora costata</i> (NZFRI 23222)	smooth-barked apple	2
*	<i>Arbutus unedo</i>	strawberry tree	
*	<i>Atriplex halimus</i>	salt bush	
*	<i>Aucuba japonica</i> (NZFRI 22547)		
*	<i>Azara microphylla</i>	vanilla tree	
*	<i>Banksia integrifolia</i>	coastal banksia	2
*	<i>Banksia ericifolia</i>		
*	<i>Banksia grandis</i> (NZFRI)	bull banksia	
*	<i>Banksia serrulata</i> [new plantings 2008]		
c?	<i>Beilschmiedia tawa</i>	tawa (2 seedlings 1/03) ¹	
*	<i>Betula pendula</i>	silver birch	2
*	<i>Brachychiton acerifolius</i>	kurrajong, Illawarra flame tree	2
c	<i>Brachyglottis repanda</i>	rangiora	
b	<i>Brachyglottis greyi</i> x <i>B. monroi</i>		
b	<i>Brachyglottis greyi</i> x <i>B. repanda</i>		
*	<i>Buddleja davidii</i>	purple buddleia	
*	<i>Buddleja saligna</i> (NZFRI 23238)	olive buddleia	
*	<i>Buddleja salvifolia</i>	South African buddleia	
*	<i>Buxus sempervirens</i>	box	
*	<i>Callicarpa rubella</i>		
*	<i>Callistachys lanceolatum</i> (syn. <i>Oxylobium</i>) ² [NZFRI]		
*	<i>Callistemon citrinus</i> (red stamens) (NZFRI 22459)		
*	<i>Callistemon pallidus</i> (pale yellow stamens)(NZFRI 23221)		1
*	<i>Callistemon salignus</i> (whitish stamens)	white (green) bottlebrush	2
*	<i>Camellia</i> spp. and cvs	camellia	
*	<i>Carica pubescens</i>	mountain pawpaw killed by frost 2001	
*	<i>Carpinus betulus</i>	hornbeam	1
b	<i>Carpodetus serratus</i>	putaputaweta	1
*	<i>Castanea sativa</i>	sweet chestnut	1
*	<i>Casuarina cunninghamiana</i> (NZFRI 23207)	river she-oak	1
*	<i>Catalpa speciosa</i>	western catalpa	1
*	<i>Ceratopetalum gummiferum</i> (NZFRI 22476)	NSW Christmas bush	
*	<i>Cercis siliquastrum</i>	Judas tree	
**	<i>Chamaecytisus palmensis</i>	tagasaste, tree lucerne	
*	<i>Chaenomeles speciosa</i>	japonica	
**	<i>Chrysanthemoides monilifera</i>	boneseed	
b	<i>Coprosma acerosa</i>	sand coprosma	
b	<i>Coprosma arborea</i> 'purpurea'	mamangi	
c	<i>Coprosma repens</i>	taupata	

¹ 2 seedlings c. 20 cm tall, found beside patch of *Gunnera tinctoria* near the 'raised pond' – no adult known in the reserve or gardens nearby

² The one shrub is in base of a *Melaleuca* tree and thus would appear to be self-established. However, the species is not known elsewhere in Virginia lake reserve, or anywhere in Wanganui, so is not regarded as adventive at present.

b	<i>Coprosma rhamnoides</i> cv.		
a	<i>Coprosma robusta</i>	karamu	
b	<i>Coprosma acerosa</i> X <i>C. repens</i> (<i>C. 'Kirkii'</i>)		
*	<i>Cornus kousa</i>	dogwood [fls 3/12/01]	1
b	<i>Corokia x cheesemanii</i>	hybrid <i>Corokia</i> [various forms]	
c	<i>Corynocarpus laevigatus</i>	karaka	2
*	<i>Cotinus coggygria</i> (= <i>Rhus cotinus</i>)	smoke tree	1
**	<i>Cotoneaster franchetii</i>	cotoneaster	
**	<i>Cotoneaster glaucophyllus</i>	cotoneaster	
*	<i>Cotoneaster henryanus</i> x <i>C. salicifolius</i>		
*	<i>Cotoneaster microphyllus</i>	a sprawling cotoneaster	
**	<i>Cotoneaster pannosus</i>		
**	<i>Cotoneaster simonsii</i>	Khasia berry	
*	<i>Cotoneaster horizontalis</i>		
*	<i>Cussonia spicata</i> (NZFRI 22583)	cabbage tree (S. African)	1
**	<i>Dendrobenthamia (Cornus) capitata</i>	dogwood	
*	<i>Deutzia</i> sp.		
b	<i>Dysoxylum spectabile</i>	kohekohe	1
**	<i>Elaeagnus x reflexa</i>	elaeagnus	
**	<i>Eriobotrya japonicus</i>	loquat	1
*	<i>Escallonia</i> sp.		
*	<i>Eucalyptus calophylla</i> (NZFRI 23253)	marri	1
*	<i>Eucalyptus cinerea</i> (NZFRI 22225)	silver dollar gum, Argyle apple	
*	<i>Eucalyptus citriodora</i>	lemon-scented gum	1
*	<i>Eucalyptus conferruminata</i> (NZFRI 5611 - collected here in 1958)	bushy yate	1
*	<i>Eucalyptus deanei</i> (NZFRI 23300)	round-leaved gum	1
*	<i>Eucalyptus ficifolia</i>	red-flowering gum	2
*	<i>Eucalyptus leucoxydon</i> (NZFRI 23229)	South Australian blue gum	1
*	<i>Eucalyptus megacarpa</i> (NZFRI 22217)	bullich	1
*	<i>Eucalyptus muelleriana</i>	yellow stringybark	1
*	<i>Eucalyptus sideroxydon</i> (NZFRI 22463, 22224)	red ironbark, mugga	2
*	<i>Eucalyptus tereticornis</i>	forest red gum	1
*	<i>Eucalyptus tricarpa</i> (NZFRI		1
*	<i>Eucalyptus viminalis</i>	manna gum, ribbon gum	1
*	<i>Euonymus europaeus</i>	spindle tree	
**	<i>Euonymus japonica</i>	Japanese spindle tree	
*	<i>Euonymus lucidus</i> (syn. <i>E. pendula</i>) (AK, NZFRI 22456, 22457)		3
*	<i>Fagus sylvatica</i>	European beech	1
*	<i>Fagus sylvatica</i> cv 'Pendula'	weeping beech	1
*	<i>Fagus sylvatica</i> cv. Rivers? (purple form) (+1)	copper beech	
**	<i>Fatsia japonica</i>	fatsia	
*	<i>Feijoa sellowiana</i>	feijoa	1
*	<i>Ficus elastica</i>	rubber plant	1
*	<i>Ficus macrophylla</i>	Moreton Bay fig	1
**	<i>Fraxinus ornus</i> (NZFRI 22466; CHR)	manna ash	
*	<i>Fraxinus excelsior</i>	ash	1
b	<i>Fuchsia procumbens</i>	creeping fuchsia	
a	<i>Geniostoma ligustrifolia</i>	hangehange	
*	<i>Gleditsia triacanthos</i>	honey locust	1
*	<i>Grevillea robusta</i>	silky oak	2
*	<i>Grevillea 'Robyn Gordon'</i>	grevillea	

b	Griselinia littoralis	broadleaf	1
b	Griselinia lucida	broadleaf	
*	Hakea salicifolia (NZFRI 8373)	willow-leaved hakea	1
b	Hebe diosmifolia agg.		
b	Hebe elliptica		
b	Hebe macrocarpa		
a	Hebe stricta var. stricta	koromiko	
b	Hebe venustula		
b	Hebe parviflora s.s.	tree hebe	
b	Hebe spp. & hybrids	hebe, koromiko	
b?	Hedycarya arborea	pigeonwood (<i>1 m juv, self-established?</i>)	
c	Hoheria populnea var. populnea	lacebark, houhere	1
**	Hydrangea macrophylla	hydrangea	
*	Ilex aquifolia	holly	
*	Iochroma caesia		
*	Jacaranda mimosifolia	jacaranda	1
*	Juglans ailantifolia	Japanese walnut	
b	Knightsia excelsa	rewarewa	1
*	Laburnum anagyroides	laburnum	
*	Lagunaria patersonia	Norfolk I hibiscus, sally wood, white oak	1
*	Lavandula angustifolia var.	English lavender	
*	Leucodendron saligna (syn. L. adsendens)		
*	Leucodendron 'Safari Sunset'		
*	Ligustrum ovalifolium	privet	
**	Ligustrum sinense	Chinese privet	
*	Liquidamber styraciflua	liquidamber	3
*	Liriodendron tulipifera	tulip tree	1
b	Litsea calicaris	mangeao	
*	Lonicera nitida		
b	Lophomyrtus obcordata	rohutu	
b	Lophomyrtus x ralphii forms)	rohutu/ramarama hybrids (various foliage colour	
*	Lophostemon confertus (NZFRI 22215)	brush box	2
*	Macadamia integrifolia	macadamia	
*	Macadamia tetraphylla	macadamia	1
*	Mackaya bella	[fls. 3/12/01]	
c	Macropiper excelsum	kawakawa	
*	Magnolia grandiflora	evergreen magnolia	1
*	Magnolia cvs (deciduous)	magnolia	
*	Mahonia sp. (unidentified)		
*	Malus x domestica	apple	
*	Malus cvs	crab apples	
*	Maytenus boaria	maiten	1
*	Melaleuca alternifolia		1
*	Melaleuca armillaris (white stamens) (NZFRI 23230) The only tree was felled in May 1999		
*	Melaleuca bracteata (NZFRI [Ogle 3959])		
*	Melaleuca decora (white stamens) (NZFRI 22472)	honey myrtle (a paperbark)	1
*	Melaleuca hypericifolia (red stamens) (NZFRI 22460)		
*	Melaleuca linariifolia		
*	Melaleuca styphelioides (white stamens) (NZFRI 22458, 22473)	paperbark	2
*	Melia azedarach	white cedar, Persian lilac	
b	Melicope ternata	wharangi	1
c	Melicytus ramiflorus	mahoe	2

b	Meryta sinclairii	puka	
b	Metrosideros bartlettii ³	Bartlett's rata	
c	Metrosideros excelsa	pohutukawa	2
b	Metrosideros robusta	northern rata	1
b	Metrosideros excelsa x M. robusta (cv 'Mistral'?)		
b	Metrosideros excelsa x M. umbellata? (cv 'Mangapiko')		
*	Mimetes cucullatus (removed in 1997)		
b	Myoporum laetum	ngaio	
c	Myrsine australis	mapou	1
*	Nandina domestica?	nandina	
*	Nerium oleander	oleander	
c	Nestegis cunninghamii	black maire	
b	Nothofagus fusca	red beech	1
b	Nothofagus menziesii	silver beech	2
b	Nothofagus solandri var. solandri	black beech	2
b	Olearia traversii	Chatham I akeake	
*	Oxylobium lanceolatum (see Callistachys lanceolatum)		
*	Paraserianthes lophantha	brush wattle	
*	Phebalium squamosum?	hedge phebalium	
*	Photinia serrulata (NZFRI)		1
b	Pisonia brunoniana	para	
c	Pittosporum crassifolium	karo	1
b	Pittosporum eugenioides	tarata, lemonwood	1
c	Pittosporum ralphii		1
c	Pittosporum tenuifolium ssp. tenuifolium	kohuhu	1
*	Platanus X acerifolia	London plane	
*	Plumbago capensis	plumbago	
*	Polygala myrtifolia	sweet pea shrub	
*	Pomaderris aspera	hazel pomaderris	1
**	Populus alba	silver poplar	
*	Populus nigra cv 'Italica'	Lombardy poplar	1
*	Populus tremula (NZFRI)	aspens	1
b	Pouteria costata (= Planchonella costata) (NZFRI 23234)	tawapou	
*	Protea neriifolia	protea	
*	Prunus cerasifera cvs (some purple-leaved)	cherry plum	
*	Prunus laurocerasus	cherry laurel	
*	Prunus lusitanica	Portugal laurel	
*	Prunus serrulata cvs	flowering cherries	
*	Prunus X domestica	plum	
b	Pseudopanax arboreus	five-finger	1
b	Pseudopanax crassifolius	lancewood	1
b	Pseudopanax ferox	fierce lancewood	
b	Pseudopanax laetus		
b	Pseudopanax lessonii	houpara, coastal fivefinger	
c	Pseudopanax crassifolius X P. lessonii		
*	Pterocarya sp.	wingnut	
*	Pyracantha sp.	fire-thorn	
*	Quercus cerris	turkey oak	1
*	Quercus ilex	holm oak	1
*	Quercus palustris	pin oak	1
**	Quercus robur	oak	1
*	Quercus rubra (=Q. borealis)?	red oak? (young planting 2001)	

³ Donated by Colin & Robyn Ogle, planted in about June 2000; flowering in Dec 2000 (it had not flowered before in a pot for > 14 years.) Survived heavy frosts without apparent damage in July 2001.

* Rhamnus alaternus	evergreen buckthorn	
* Rhamphiolepis umbellata	sexton's bride	
* Rhododendron ssp. & cvs	rhododendron, azalea	
* Rhodosphaera rhodantha (NZFRI	deep yellow-wood, tulip satinwood	
* Rhus lancea (NZFRI 23209; AK)		1
* Ribes sanguineum	flowering currant	
* Robinia pseudacacia cv 'Frisia'	robinia	
* Rosa chinensis & cvs	hybrid tea and other roses	
* Rosmarinus officinalis	rosemary	
** Salix babylonica	weeping willow	
** Salix cinerea	grey (pussy) willow	
* Salix elaeagnos	bitter willow (an osier)	
* Salix fragilis	crack willow	
* Salix matsudana	tortured willow	
* Salix sp. (unidentified)		
** Senecio petasitis	velvet groundsel	
a Solanum laciniatum	poroporo	
** Solanum mauritanium	woolly nightshade	
** Solanum pseudocapsicum	Jerusalem cherry	
b Sophora chathamica	kowhai [by rose pergola]	1
b Sophora microphylla s.s.	kowhai [track in from south entrance]	1
b Sophora longicarinata	Golden Bay kowhai	
b Sophora prostrata	shrub kowhai	
b Sophora tetraptera	kowhai	
* Spiraea sp.	may	
* ? <i>Stenocarpus angustifolius</i> – needs fruit for +ve ID		
* Stenocarpus salignus (NZFRI 23236)		1
* Stenocarpus sinuatus (NZFRI	firewheel tree	1
* Styrax japonica (NZFRI 22471)		1
* Syncarpia glomulifera	red turpentine	3
* Syzygium australe	lillypilly	1
b Syzygium maire	swamp maire, maire tawake	1
* Syzygium paniculatum	lillypilly	1
** Teline monspessulana	montpellier broom	
**? Teline stenopetala		
* Tilia x europaea	lime, linden	2
* Tristaniopsis laurina (NZFRI 22203)		1
** Ulex europaeus	gorse	
* Ulmus glabra cv 'Camperdown'	weeping elm	1
** Ulmus x hollandica	suckering elm	1
* Ulmus sp.	golden elm	
* Viburnum japonicum		
* Viburnum odoratissimum (NZFRI 23239 ;AK)		1
* Viburnum tinus? (NZFRI	laurustinus?	
* Viburnum x burkwoodii		
* Viburnum sp. [soft furry rounded lvs]		
b Vitex lucens	puriri	1
* Waterhousea floribunda (NZFRI 23235)	weeping lillypilly	1
Westringia sp.		

4. Monocot lianes

** Asparagus (<i>Myrsiphyllum</i>) asparagoides	smilax	
* Asparagus falcatus (AK)		
** Asparagus scandens	climbing asparagus	

5. Dicot lianes

*	<i>Akebia quinata</i>	akebia
**	<i>Araujia sericifera</i>	moth vine (1 plant seen & to be removed, 7/01)
a	<i>Calystegia sepium</i>	pink bindweed
*	<i>Clematis montana</i>	
**	<i>Clematis vitalba</i>	old man's beard
**	<i>Hedera helix</i>	ivy
*	<i>Jasminum mesneyi</i>	yellow jasmine
**	<i>Jasminum polyanthum</i>	jasmine
a	<i>Muehlenbeckia australis</i>	pohuehue
*	<i>Parthenocissus tricuspidata</i>	Virginia creeper
**	<i>Passiflora mollissima</i>	banana passionfruit
**	<i>Passiflora</i> sp. (cf. <i>P. mollissima</i> ; smaller, less furry) (CHR)	
*	<i>Pandorea</i> sp.	
*	<i>Phaseolus coccineus</i>	scarlet runner bean
*?	<i>Rosa multiflora</i>	thornless rambling rose [5-petalled white flowers]
**	<i>Rumex sagittatus</i>	climbing dock
**	<i>Senecio mikanioides</i>	German ivy
**	<i>Tecomaria capensis</i>	
*	<i>Wisteria</i> sp.	wisteria

6. Monocot herbs

(a) Sedges

a?	<i>Bolboschoenus fluviatilis</i>	purua grass
**	<i>Carex divulsa</i>	
b	<i>Carex flagellifera</i>	
a	<i>Carex inversa</i>	
a	<i>Carex lessoniana</i>	
a	<i>Carex maorica</i>	
a	<i>Carex secta</i> s.s.	purei
a	<i>Carex solandri</i>	
b	<i>Carex testacea</i>	
a	<i>Carex virgata</i>	
a	<i>Carex</i> sp. (unnamed, aff. <i>C. geminata</i> - giant sp.)	
**	<i>Cyperus eragrostis</i>	
*	<i>Cyperus involucratus</i>	
a	<i>Cyperus ustulatus</i>	mariscus
a	<i>Eleocharis acuta</i>	sharp spike sedge
a	<i>E. gracilis</i>	slender spike sedge
a?	<i>E. sphacelata</i>	bamboo spike sedge
**	<i>Isolepis marginata</i> (CHR)	
a	<i>Isolepis reticularis</i> (CHR)	
**	<i>Isolepis setacea</i> (CHR)	
a	<i>Schoenoplectus tabernaemontani</i>	kapungawha
a	<i>Schoenus maschalinus</i>	

(b) Grasses

**	<i>Agrostis stolonifera</i>	creeping bent
**	<i>Anthoxanthum odoratum</i>	sweet vernal
**	<i>Bromus diandrus</i>	ripgut brome
**	<i>Bromus hordeaceus</i>	soft brome
**	<i>Bromus willdenowii</i>	prairie grass
**	<i>Cynodon dactylon</i>	Indian doab
**	<i>Dactylis glomerata</i>	cocksfoot
**	<i>Ehrharta erecta</i>	veld grass
**	<i>Glyceria declinata</i>	floating sweetgrass

**	Holcus lanatus	Yorkshire fog
**	Lolium perenne	perennial ryegrass
a	Microlaena stipoides	meadow rice grass
**	Paspalum dilatatum	paspalum
**	Paspalum distichum (CHR)	Mercer grass
**	Pennisetum clandestinum	kikuyu grass
**	Piptatherum miliaceum	
a?	Poa anceps	
**	Poa annua	
**	Poa trivialis	
**	Pseudosasa japonica	a bamboo
**	Schedonorus phoenix (= Festuca arundinacea)	tall fescue
**	Vulpia bromoides	vulpia hairgrass

(c) Rushes

**	Juncus articulatus	jointed-leaved rush
**	Juncus bufonius	toad rush
**	Juncus effusus	soft rush
a	Juncus pallidus	
a	Juncus planifolius	
**	Juncus tenuis	

(d) Monocots other than sedges, grasses and rushes

*	Aloe sp.	aloe
c	Arthropodium cirratum	renga lily
**	Agapanthus orientalis	agapanthus
**	Allium triquetrum	three-cornered garlic, "wild onion"
**	Amaryllis belladonna	naked lady
*	Anigozanthus flavidus	kangaroo paw
*	Aspidistra elatior	aspidistra, cast-iron plant
**	Chlorophytum comosum (CHR)	
*	Clivia miniata	clivia
**	Crocoshmia x crocosmiiflora	montbretia
*	Doryanthes sp.	
**	Egeria densa (CHR)	egeria oxygen-weed
**	Iris foetidissima	stinking iris
**	Iris pseudacorus	flag iris
*	Hedychium sp. (unidentified)	wild ginger
*	Kniphofia uvaria?	redhot poker
a	Lemna sp. [unnamed; L. minor of NZ authors]	duckweed
*	Lilium spp.	lilies
b	Phormium cookianum	wharariki, NZ mountain flax
a?	Phormium tenax	harakeke, NZ flax
*	Pontaderia cordata	pickerel weed
*	Potamogeton crispus	curled pondweed
a	Thelymitra longifolia	sun orchid
**	Tradescantia fluminensis	wandering Jew
a	Typha orientalis	raupo
*	Wachendorfia thyrsiflora	
*	Watsonia sp.	
**	Zantedeschia aethiopica	arum lily

7. Dicot Herbs

**	Achillea millefolium	yarrow
**	Angelica pachycarpa	angelica

**	Aphanes inexpectata	parsley piert
*	Astilbe sp.	
**	Bellis perennis	lawn daisy
**	Cardamine flexuosa	bitter cress
**	Cardamine hirsuta	bitter cress
**	Centaurium erythraea	centaury
a	Centella uniflora	
**	Conyza albida	fleabane
**	Crepis capillaris	hawksbeard
**	Cymbalaria muralis	ivy-leaved toadflax
**	Dichondra micrantha	
**	Duchesnea indica	Indian strawberry
**	Epilobium ciliatum	willowherb
**	Erigeron karvinskianus	Mexican daisy
a	Euchiton involucrata (Gnaphalium involucratum)	native cudweed
**	Euphorbia characias (CHR)	Wulfen spurge
**	Euphorbia peplus	milkweed
**	Fumaria capreolata	rampant fumitory
**	Fumaria muralis	scrambling fumitory
**	Galinsoga parviflora	galinsoga, Kew weed
**	Galium aparine	cleavers
**	Geranium molle	soft dove's foot
**	Glechoma hederacea	ground ivy
a	Glossostigma elatinoides (CHR)	
**	Gnaphalium sp. (unidentified - USA sp.)	cudweed
**	Gunnera tinctoria	Chilean rhubarb
*	Helleborus sp.	winter rose
a	Hydrocotyle heteromeria	waxweed
a	Hydrocotyle moschata	hairy pennywort
a	Hydrocotyle novae-zeelandiae (CHR)	swamp hydrocotyle
**	Hypericum perforatum	St John's wort
**	Hypochoeris radicata	cat's ear
**	Impatiens walleriana (CHR)	busy Lizzie
**	Lapsana communis	nipplewort
a	Lilaeopsis sp. (L.ruthiana?) (CHR)	tape measure plant
**	Lotus pedunculatus	lotus major
**	Lotus suaveolens	hairy lotus
**	Ludwigia palustris (CHR)	
**	Lythrum salicaria (CHR)	purple loosestrife
**	Mentha pulegium	penny royal
**	Mentha x piperita var. citrata (CHR)	peppermint
**	Modiola caroliniana	creeping mallow
**	Myosotis sylvatica	garden forget-me-not
a	Myriophyllum propinquum	water milfoil
**	Nepeta X faassenii	catmint
**	Nymphaea alba	water lily
**	Orobanche minor	broomrape
**	Osteospermum fruticosum?	
**	Oxalis articulata	sourgrass
a	Oxalis exilis	creeping oxalis
**	Oxalis incarnata	lilac oxalis
**	Oxalis latifolia	fishtail oxalis
*	Penstemon sp.	
**	Pericallis X hybrida	cineraria
**	Physalis peruviana	cape gooseberry

**	Phytolacca octandra	ink-weed
**	Plantago lanceolata	narrow-leaved plantain
*	Plectranthus ciliatus	
**	Polygonum aviculare	wireweed
**	Polygonum hydropiper	water pepper
a	Polygonum salicifolium	NZ willow-weed
**	Portulacca oleracea (CHR)	purslane
**	Prunella vulgaris	selfheal
**	Ranunculus repens	creeping buttercup
**	Rorippa nasturtium-aquaticum	two-row watercress
**	Rumex conglomeratus	clustered dock
**	Rumex crispus	curled dock
**	Rumex obtusifolius	broad-leaved dock
**	Sagina procumbens	pearlwort
**	Senecio bipinnatisectus	fireweed
**	Solanum nigrum	black nightshade
**	Soleirolia soleirolii	mind-your-own-business
**	Soliva sessilis	Onehunga weed
**	Sonchus oleraceus	puha, sow thistle
**	Stachys sylvatica	hedge woundwort
**	Stellaria alsine	bog stitchwort
**	Trifolium dubium	suckling clover
**	Trifolium repens	white clover
**	Trifolium subterraneum	subterranean clover
**	Tropaeolum majus	nasturtium
*	Urtica dioica	creeping nettle
**	Veronica arvensis	field speedwell
**	Veronica serpyllifolia (CHR)	turf speedwell
**	Vinca major	periwinkle
**	Viola odorata	violet

8. Ferns and Fern Allies

c	Adiantum formosum	giant maidenhair fern	
b	Asplenium bulbiferum s.s.	hen-and-chicken fern	
a	Asplenium flaccidum	hanging spleenwort	
a	Asplenium oblongifolium	shining spleenwort	
a	Asplenium polyodon	sickle spleenwort	
a	Blechnum minus (of NZ authors)	swamp kiokio	
a?	Blechnum novae-zelandiae	kiokio	
b	Cyathea dealbata	ponga, silver fern	1
b	Cyathea medullaris	mamaku, black tree fern	1
b	Dicksonia fibrosa	wheki-ponga	1
a?	Dicksonia squarrosa	wheki	
**	Equisetum arvense (CHR)	field horsetail	
a	Hypolepis ambigua		
b	Marattia salicina	king fern	
a	Paesia scaberula	ring fern	
a	Microsorium pustulatum	hound's tongue fern	
**	Polystichum proliferum (WELT)		
a	Polystichum richardii prob. P. neozelandicum	hard shield fern	
a	Pteridium esculentum	bracken	
**	Pteris cretica	Cretan brake	
a	Pteris tremula	shaking brake	
a	Pyrrosia eleagnifolia	leatherleaf fern	