

2. BACKGROUND

2.1 DESCRIPTION

2.1.1 LOCATION AND LEGAL DESCRIPTION

Otari Native Botanic Garden and Wilton's Bush Reserve (Otari-Wilton's Bush) comprises about 5 hectares of cultivated native plant collections and about 96 hectares of mature and regenerating native forest. Otari-Wilton's Bush is the only botanic garden in New Zealand dedicated solely to native plants, and its mature podocarp northern rata forest is one of the few remaining remnants of this once common forest type on the Wellington Peninsula. The forest has been a recreation area for Wellingtonians since the 1860's.

Otari-Wilton's Bush nestles in the deep valley formed by the Kaiwharawhara Stream (also known as Te Mahanga Stream) flowing northeast towards Ngaio Gorge. The northwestern boundary borders the Te Wharangi ridge on the skyline and the southwestern boundary borders Karori Cemetery, Ian Galloway Park, and mixed exotic/indigenous forest on private land. Surrounding the rest of Otari-Wilton's Bush to the east and north are the suburbs of Wilton and Chartwell. Wilton Road forms much of the south eastern boundary and Otari School and Wilton Bowling Club adjoin Otari-Wilton's Bush on Wilton Road.

Most of Otari-Wilton's Bush is classified as Scenic Reserve (see *Figure 1*). The original reserve area was gazetted in 1906 under the Scenery Preservation Act (1903). In 1918 the reserve was acquired by Wellington City Council "in Trust for Recreation purposes and for the preservation of Native Flora" (s62 of the Reserves and Land Disposal and Public Bodies Empowering Act 1917).

The area on the Wilton Road side of the Kaiwharawhara Stream, including Wilton's Bush was added to Otari Scenic Reserve in 1925 (ex Chapman Estate). From the 1960s to 1990s, Wellington City Council continued to acquire adjacent areas to the north (ex Chartwell Subdivision) and northeast (ex Curtis Estate) and formed the management area outlined in the 1996 *Otari Native Botanic Garden Management Plan*. In 2000, the name of the reserve was officially changed to Otari Native Botanic Garden and Wilton's Bush Reserve and is now commonly referred to as Otari-Wilton's Bush. Full legal descriptions are provided in *Appendix 1*.

2.1.2 LANDSCAPE AND LANDFORM

Otari-Wilton's Bush ranges from 70-280 metres above sea level. The reserve is incised by the Kaiwharawhara Stream (also known as Te Mahanga Stream), and is a key part of the Kaiwharawhara Catchment. To the west of the stream, the reserve is dominated by very steep hill slopes leading up to Te Wharangi Ridge. To the east of the stream are more gentle slopes which beyond the reserve eventually climb to the Tinakori Hill ridgeline. The forest of Otari-Wilton's Bush is a visually significant feature, viewed from Churchill Drive below Chartwell and seen from Wilton Road.

Physical Parameters

Altitude: 70-280 metres above sea level.

Topography: Very steep hill slopes; deep stream-bed orientated northeast to southwest, draining northeast.

Soil Parent Material: Greywacke (bedrock exposed in streams).

Soil: Korokoro soil type. Shallow (less than one metre deep); stoney colluvium on ridges and slopes; silt loam over colluvium in alleys and hollows.

Rainfall: 1240 millimetres, averaging 125 rainy days p.a.

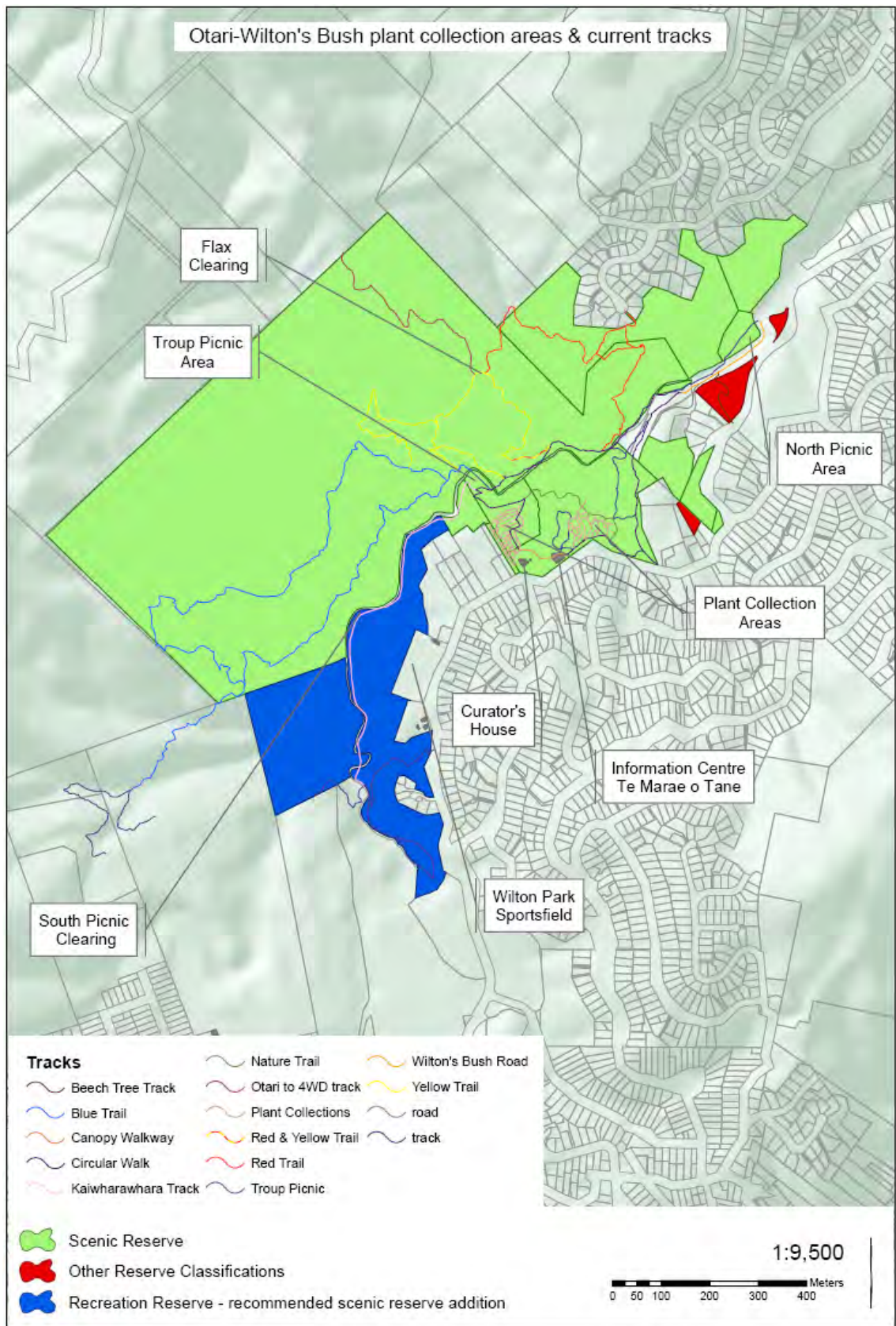


Figure 1: Otari-Wilton's Bush

2.1.3 INDIGENOUS ECOSYSTEMS AND IMPORTANT ECOLOGICAL FEATURES

The area known as Wilton's Bush near Wilton Road and part of the forest up the western ridge is of national significance as one of the few remaining areas of original podocarp-northern rata forest on the Wellington Peninsula. Much of the surrounding forest is also of significance as advanced secondary forest with remnant elements of primary forest. In all there are about 100 hectares of forest. Large podocarps such as rimu, totara, miro and matai can be readily seen. Kohekohe, rewarewa, tawa and mahoe trees dominate the upper slopes, and in valley areas tall pukateas are found.

Epiphytes (perching plants) and climbers occur throughout the forest. About 150 species of flowering plants, podocarps and ferns can be found growing naturally in the forest. An active revegetation programme to the south of the Troup Picnic Area aims to further restore the forest.

Bird life was greatly diminished with the loss of mature forest in the catchment and with intense hunting of kaka, kereru, and tui in the 19th century. However, in recent years records show that bird numbers are increasing in Otari-Wilton's Bush, and they are likely to be benefiting from a number of factors including; a rigorous possum control programme throughout the area, the development of Karori Wildlife Sanctuary and the conscious development of the Outer Green Belt as a corridor providing suitable habitats and range. Native birds recently observed in Otari-Wilton's Bush include silvereye, kingfisher, fantail, grey warbler, tui, kereru, paradise shelduck, shining cuckoo, morepork, NZ falcon, bellbird and tomtit.

Other fauna recorded as present within the forest ecosystem include cicada, dragonfly, lizards (including forest gecko and copper skink), glow worms, weta and a generally rich invertebrate population; however this information is limited to few studies.

In March 2007, a 'Bioblitz' was conducted with the goal of counting as many species as possible during a 24 hour period. The final count was 1345 species (see Appendix 5 for summary of results).

The main threats to the forest are pest plants and animals, lack of podocarp recruitment, surrounding land uses and pressures, and fire.

The other key ecological feature of Otari-Wilton's Bush is the Kaiwharawhara Stream (also known locally as Te Mahanga branch of the Kaiwharawhara Stream) which runs through the middle of the reserve. The stream retains a relatively healthy habitat despite the land use pressures placed upon it. The head of the stream sits within Karori Wildlife Sanctuary where it is dammed. The stream is then piped under Appleton Park and Ian Galloway Park (closed landfills), and surfaces again to flow down through Otari-Wilton's Bush, Trelissick Park/Ngaio Gorge and into the harbour.

Key pressures to the stream include stormwater flow, stormwater contamination, and sedimentation. However, the reserves through which the stream flows openly (including Otari-Wilton's Bush) mean that pockets of biodiversity occur which can provide a pool of organisms that can recolonise the stream following a flood, drought or spillage event.

In 2002, fish sampling within Otari-Wilton's Bush found the following species: banded kokopu, long finned eel, koaro, as well as some brown trout.¹ During the Bioblitz in 2007 redfin bully were also observed, probably due to the recent installation of a fish ladder downstream.

¹ Source: Kingett Mitchell Ltd (June 2002). *Ecological condition and health of the Kaiwharawhara Stream, Wellington*. Prepared for Wellington City Council.

2.1.4 CULTURAL HERITAGE

A historical outline is given in Section 2.2.1 and fully described in Appendix 2.

Otari-Wilton's Bush is named both for its Maori heritage where Otari means "Place of Snares" and was settled by Te Atiawa/Taranaki Whanui, and for the Wilton family whose forefather, Job Wilton was one of the pioneer farmers in the region and owned the land adjacent to the reserve, including a part of the reserve from 1860. These aspects, along with its natural, built and continuing social heritage contribute to the uniqueness of Otari-Wilton's Bush.

2.1.5 RECREATIONAL RESOURCES AND LINKAGES

The recreational history of Otari-Wilton's Bush goes back to the 1860s, gaining in popularity as it became one of the few surviving forest remnants near the city. The forested areas on both sides of the stream have been known locally as "Wilton's Bush" since the 1870s, even though only the area on the true right of the Kaiwharawhara Stream was actually owned by Wilton.

Today, Otari-Wilton's Bush still enjoys high levels of recreational use. These are pedestrian based, and include walking, running, dog walking (on-leash), picnics and barbeques.

There are two primary entrances to Otari-Wilton's Bush on Wilton Road: the *Banks Entrance* to the main garden area with its commanding views across the valley and the *Carpark Entrance* further north along the road. Near the *Banks Entrance* but screened from the public are the Curator's house and small plant nursery. The combined Information Centre - Te Marae o Tane, staff offices and workshop are located in a building midway between the two Wilton Road entrances. There is also a second extensive garden area behind the *Carpark Entrance*.

From the garden areas, tracks drop down to the Kaiwharawhara Stream either to the open *Troup Picnic Site* (with toilets and barbecue facilities) or through mature podocarp forest. A car park and another mown picnic area (North Picnic Area) are reached from the low point on Churchill Drive, another primary entrance to the reserve. Wilton Bush Road is also accessed from here, leading to the privately owned Wilton House. A network of tracks provide loop walks through forest and clearings and give access to the suburb of Chartwell, to the Karori Cemetery, to Ian Galloway Park, and to the Outer Green Belt Skyline Track and Johnston's Hill Reserve.

2.1.6 NATIVE PLANT COLLECTIONS

Otari Open-air Native Plant Museum was officially opened in 1926, and a kauri was planted just inside Banks Entrance. Since then, the collections have continued to grow. These have included plantings into the regenerating forest area (eg beech plantings around the flax clearing) but in recent years have been mostly confined to the Banks Entrance and Wilton Road car park area (refer to Section 2.2 Historical Information for more detail). Since their inception the native plant collections have focused on the conservation of native plants, providing examples of New Zealand vegetation types, the use of native plants for horticultural purposes, and for scientific study and education.

Today, there are 874 taxa (taxonomic units or groupings) represented in the plant collections, approximately one third of New Zealand's known higher plant taxa.

2.1.7 ROLE OF BOTANICAL GARDENS

Otari-Wilton's Bush is one of the Botanic Gardens of Wellington. As a botanic garden, Otari-Wilton's Bush is unique in two ways; firstly, as a Scenic Reserve, and secondly as having always had a focus on native plants.

Over the last 80 years the role of Otari-Wilton's Bush has undergone a subtle shift from a focus on providing a 'living collection' of all New Zealand's plants and 'primitive' vegetation types, to an emphasis on the conservation of native plants and the development of a resource for scientific studies and education. This shift reflects the current international trend of botanic gardens having a significant focus on conservation, education, science and research.

2.2 HISTORICAL INFORMATION

2.2.1 HISTORICAL OUTLINE

The previous management plan provided a detailed historical description of Otari-Wilton's Bush and this is included in *Appendix 2*. The description includes changes in land tenure, the role of Dr Leonard Cockayne (1855-1934), early development of the plant collections and forest management. The following is a very brief timeline of key events in the history of Otari-Wilton's Bush and should be read in conjunction with *Appendix 2*.

- Pre-1847
 - Traditional occupation rights over the Otari area are claimed by Te Atiawa/Taranaki Whanui which includes Ngati Tama.
 - Otere Hepapa and his wife, were living in the area, and offered land to European settler Henry Burling and family.
- 1847-1905
 - Otari Native Reserve created, including the 134 acre 'Pipitea Natives Block' (Te Ati Awa), in which the majority of the present-day Otari-Wilton's Bush Reserve area sits.
 - In 1860 Job Wilton bought 43 Hectares from Samuel Maxton below the 'Pipitea Block'.
 - By 1900 most of the Native Reserve area had been alienated from iwi.
- 1906
 - Otari Scenic Reserve gazetted. Pipitea Block acquired by Crown for Scenic Reserve under the Scenery Preservation Act 1903.
- 1907
 - Steep gully slopes adjacent to the reserve (owned by the Witton's) purchased by the Department of Lands and Survey and added to the reserve.
- 1918
 - Reserve acquired by Wellington City Council under s62 of the Reserves and Land Disposal and Public Bodies Empowering Act 1917 'in Trust for Recreation purposes and for the preservation of Native Flora'.
- 1925
 - Wilton's Bush purchased (then owned by Martin Chapman, and run as Chapman's Gardens) and added to the reserve.
- 1926-1946
 - Otari Open-Air Native Plant Museum was officially opened and Dr Cockayne appointed as Honorary Botanist to the Wellington City Council and effectively became the Director of the Plant Museum.
 - 'A Scheme for the Development and Arrangement of the Otari Open-Air Plant Museum' developed by Cockayne.
 - First botanical study of the natural vegetation of the reserve carried out by Stan Reid.
 - Otari became propagation headquarters for the Native Plant Preservation Society.
 - Expansion of cultivated area and public facilities.
- 1947
 - Walter Brockie appointed Curator.
 - Addition of 264 species to the collection, including the rock garden and a number of alpine plants.
- 1949
 - Name changed to Otari Gardens.
- 1952
 - Wilton Memorial Gate erected at the Wilton Road entrance to Otari Gardens which had once formed the access road to the Wilton homestead.
 - Cockayne Memorial placed over the graves of Dr Cockayne and his wife Maude.

- 1962
 - Raymond Mole appointed Curator.
 - Taxonomic beds were developed.
 - Educational potential of Otari was promoted.
- 1967
 - Acquisitions made to the reserve during the development of the Chartwell subdivision.
- 1968
 - Wild Garden established following tree-falls and canopy openings caused by the Wahine Storm.
- 1970
 - 1.5 hectares of land adjacent to Wilton's Bush purchased from the Curtis family.
- 1979
 - Reserve designated as a Historic Area as part of the 1979 District Scheme Review.
- 1980
 - Information Centre (Te Marae o Tane) built.
- 1987
 - Carol Leach appointed as Supervisor.
- 1991
 - Mike Oates appointed as Curator of all the Botanic Gardens of Wellington, including Otari.
- 1993
 - Name changed to Otari Native Botanic Garden.
 - Major possum control programme begun by Wellington Regional Council.
- 1994
 - 0.1 hectares of regenerating bush purchased from the Rouse family.
- 1995
 - Anita Catchpole appointed as Supervisor.
- 1999
 - Name changed to Otari Native Botanic Garden and Wilton's Bush Reserve in consultation with interest groups and iwi.
 - Canopy walkway constructed.
 - Waharoa placed at entranceways.
- 2000
 - Establishment of the Otari-Wilton's Bush Trust, a voluntary organisation that raises funds, coordinates guides, hosts and other programmes.
- 2001
 - Jane Wright appointed as Curator.
- 2002
 - Project Kaiwharawhara initiated.
- 2003
 - Robyn Smith appointed as Curator.
 - Land adjacent to Wilton House acquired.
- 2004
 - Recognition as a Garden of National Significance
- 2005
 - Rewi Elliot appointed as Curator/Manager.
 - Land adjacent to the Troup Picnic Area (ex-Otari School) acquired, and pine trees cleared from it.
- 2007
 - 'Bioblitz' took place recording 1345 species

2.2.2 HISTORIC ROLE

Otari-Wilton's Bush has a long history of public recreation, enjoyment and forest protection even prior to it becoming a reserve. By the turn of the 20th century, Wilton's Bush, owned by farmer Job Wilton, was already a popular recreation area. The demise of natural vegetation around Wellington city was concerning many residents and the purchase of the 'Pipitea Block' (the first part of Otari-Wilton's Bush to become reserve) was in response to a community delegation asking the government to take steps to preserve the forested area. Wilton's Bush was informally protected by its owners until it was added to the reserve in 1925.

The earliest 'official' role of the Reserve was set by Dr Leonard Cockayne in his 1932 *A Scheme for the Development and Arrangement of the Otari Open-Air Native Plant Museum*. Dr Cockayne identified four themes for the development of Otari-Wilton's Bush: flora, vegetation, horticulture, and forest restoration.

1932 Roles

Flora:	To establish a collection of all the New Zealand species possible to cultivate in the native plant museum.
Vegetation:	Examples artificially produced of various types of the primitive vegetations of New Zealand
Horticulture:	The use of indigenous plants for horticultural purposes shall be illustrated in various ways for the information of those desirous of using such plants in their garden.
Forest restoration:	The forest shall be brought back as far as possible to its original form, both as to its structure and composition.

In the 1980 Management Plan '*Otari Open Air Native Plant Museum*' Cockayne's themes were essentially retained, with the additions of **Visual Qualities** (*to preserve and enhance the natural visual quality of Otari, particularly in general design and plant layout; where beauty must be the primary consideration*) and the **Outer Green Belt** (*to achieve objectives of the Outer Belt where there is no conflict with Otari, including protection of open space, segregation of urban and rural land use, scenic protection and provision of natural recreational open space*).

In the 1996 management plan '*Otari Native Botanic Garden*' the themes were kept but the roles now emphasised conservation, research and education.

1996 Roles

Flora:	To maintain and develop a native botanic garden for the conservation of native plants.
Vegetation:	To maintain and develop a native botanic garden as a resource for scientific studies and education in natural sciences, conservation and native plant horticulture.
Forest:	To protect the forest area, taking into account Otari's role as a key link in the Kaiwharawhara catchment ecological corridor.
Recreation:	To provide a recreation area where the natural environment can be enjoyed, subject to necessary measures protecting the environment.

The role of Otari-Wilton's Bush today recognises these historic themes, and continues to emphasise the position of Otari-Wilton's Bush in conservation, research and education.