

4 Resources of the City

4.1	Introduction.....	4-1
4.2	Background Information	4-1
	4.2.1 Location	4-1
	4.2.2 Population	4-1
	4.2.3 Household Composition	4-2
	4.2.4 Labour Force	4-3
	4.2.5 Ethnicity	4-3
4.3	Resources of the City	4-4
	4.3.1 Geology and Soils	4-4
	4.3.2 Vegetation and Wildlife	4-5
	4.3.3 Coastline	4-5
	4.3.4 Water Quality	4-5
	4.3.5 Air Quality	4-6
	4.3.6 Landscape	4-6
	4.3.7 Tangata Whenua	4-6
	4.3.8 Cultural Heritage	4-6
	4.3.9 Residential Areas	4-7
	4.3.10 Business Areas	4-7
	4.3.11 Rural Areas	4-8
	4.3.12 Open Space	4-8
	4.3.13 Community Infrastructure	4-8
	4.3.14 Infrastructure	4-9

4. Resources of the City

4.1 Introduction

- This section provides background statistical data on the city and a brief description of the city's resources. The purposes of including it are to provide:
- The information base for the city which, in combination with the provisions of the Resource Management Act 1991 (RMA), other relevant documents and the consultation undertaken for the Plan is the background for the formulation of issues facing the city as set out in Section 5 and the Council's resource management goals, as set out in Section 6
- Resource data for subsequent sections of the Plan which deal with the various resource management aspects of the city.

4.2 Background Information

4.2.1 Location

North Shore City is located within the Auckland Region. It has an area of 12,979 hectares with an extensive coastal boundary to the Hauraki Gulf and Waitemata Harbour. The city is connected to Auckland City by the Auckland Harbour Bridge. Its northern boundary abuts Rodney District and only the Waitemata Harbour separates North Shore from Waitakere City.

4.2.2 Population

The 2001 Census recorded North Shore City's total population at 184,821 people, making it the local authority with the fourth largest population in the country, being 4.9% of the total population. Table 4.1 sets out the growth by community board area over the past decade.

Total Population for North Shore City, by Community Board Areas (1991, 1996 and 2001)				
Community Board Area	1991	1996	2001	Population change 1991 - 2001 (%)
East Coast Bays	31887	35625	37383	17.2
Glenfield	25557	28203	29826	16.7
Takapuna	35784	39636	40821	14.1
Birkenhead-Northcote	34275	37491	38436	12.1
Devonport	16407	17505	16746	2.1
Albany	8736	13707	21612	147.4

Note: By Community Board Area boundaries (2001)

Source: Statistics New Zealand

North Shore City experienced strong post-war growth in population within the city, particularly during the 1960s and 1970s following construction of the Harbour Bridge. Population growth has slowed since then, but the city is still growing at a relatively rapid rate. While the Council does not have a policy of promoting targets for population growth, it is important to predict the likely scale of future growth to inform long-term planning. The projected population increase for the city under a medium growth scenario indicates there may be around 242,600 persons by the year 2021 - an increase of 36%. By comparison, the regional population figures indicate an increase of 40% and the national figures an increase of 18% over the same period.

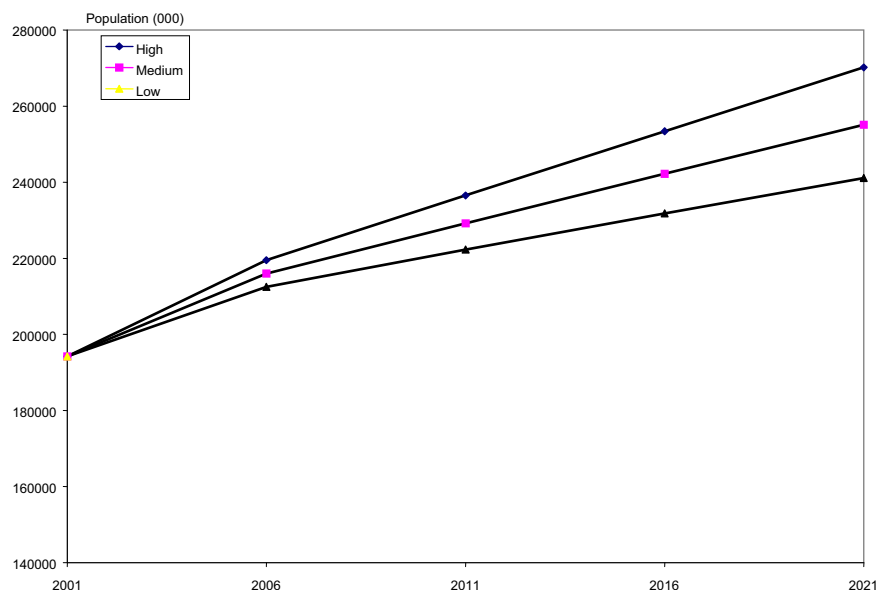
Over the longer term some slowdown in growth is anticipated owing to:

- *Lower birth rates for North Shore residents*
- *North Shore's older population structure*
- *Limited capacity for accommodating growth.*

North Shore City has an ageing population structure which is characteristic of New Zealand as a whole. In 2002 the proportion of the city's population aged 65 and over, represented 11% of the population. By 2021 this is likely to increase to 15.8% (based on 2001 data).

Figure 4.1 shows three alternative scenarios for population growth in the city. These predictions are based on 2001 data and are regularly reviewed.

Figure 4.1 North Shore City Projected Population (2001 - 2021)



Source: Statistics New Zealand

The above projected population estimates are subject to factors including net immigration into the city, the rate of natural population increase, the availability of land and the role of this District Plan in influencing the scale and rate of development growth.

4.2.3 Household Composition

There were 66,609 occupied dwellings within North Shore City in 2001. This is 16.9% of all occupied dwellings within the Auckland region; a higher proportion than North Shore City's share of population which was 15.9% of the total population for the region. This reflects a smaller average household size on the North Shore owing to an older average age, higher income, and higher than average European ethnic composition of the city. The rate of increase in the number of households will continue to increase at a faster rate than the population growth. Projected growth in the number of households in a medium growth scenario, suggests households will increase to approximately 94,900 by 2021 (based on 1996 data).

The city is notable for its high proportion of one-family households which comprise 71.3% of all households in the city. The average household size in North Shore City is 2.7 people which is the equivalent of the national average. Household size is influenced by a number of factors, including the age structure of the population, development opportunities, cultural diversity and the condition of the economy. Changes to these and other influencing factors would accordingly affect both household numbers and total population.

4.2.4 Labour Force

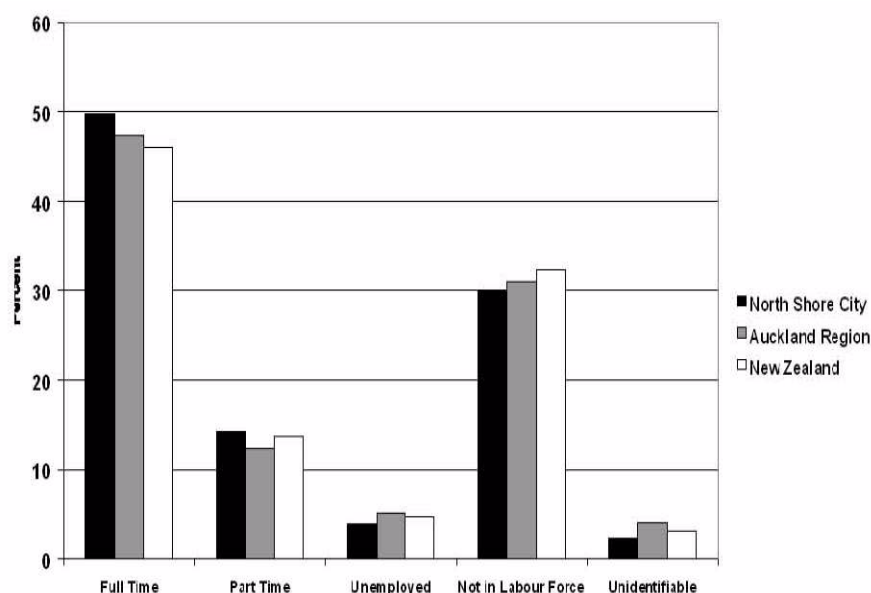
In 2001 North Shore City had a lower than average unemployment rate of 3.9% compared with the regional and national averages of 5.1% and 4.8% respectively. Figure 4.2 details the employment status of North Shore City compared with the Auckland region and New Zealand situation.

In 2001 the labour force in the city comprised around 93,000 workers, with just under half travelling out of North Shore City to work. However, growth rates for North Shore City-based jobs have been increasing more rapidly than the labour force over recent decades. Notwithstanding this increase in the level of jobs based on the North Shore, the difference between resident labour force and residents who actually work in the city has increased during this period.

The most common occupation group in North Shore City is legislators, administrators and managers. The most common occupational group in New Zealand as a whole is service and sales. North Shore City has a higher average of tertiary educated residents at 37.6% compared to the national average of 32.2%.

The city's residents are more likely to earn over \$30,000 per year than those in the Auckland region or in the rest of the country.

Figure 4.2 Employment Status - North Shore City, Auckland Region and New Zealand (2001)



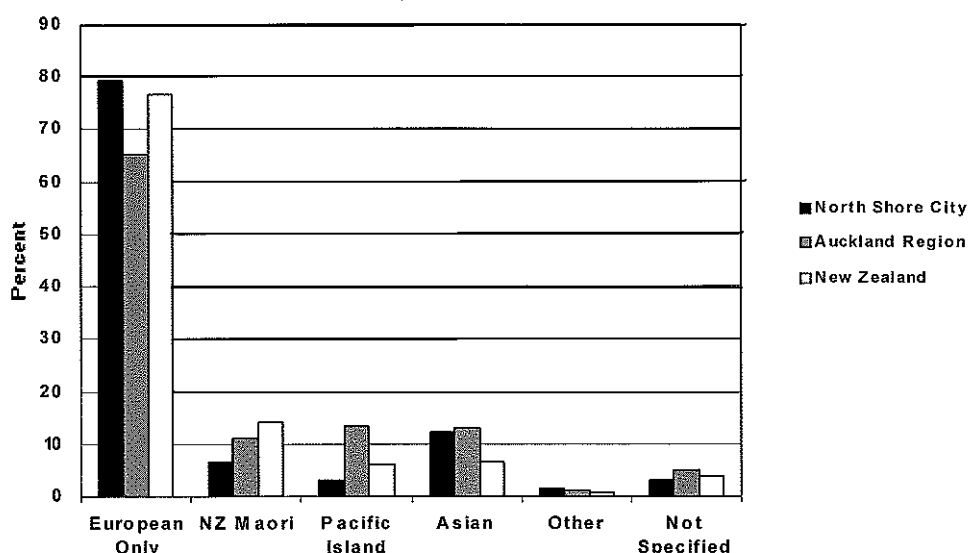
Source: Statistics New Zealand

4.2.5 Ethnicity

In the 2001 Census, 79.2% of residents classed themselves as being of 'European' descent as compared to 65.1% in the Auckland region and 76.8% in the rest of New Zealand. People of Maori descent made up 6.7% of people in the North Shore,

compared with regional and national figures of 11% and 14.7% respectively. North Shore City also contains a smaller proportion of Pacific Island people (3.3%) compared with the Auckland region (13.3%) and the rest of New Zealand (6.2%). Most significant is the increase in people of Asian descent to approximately 12.3% of the total population compared with 6.4% for the rest of New Zealand, while the Auckland region had the highest proportion of Asian population at 13.1%. Figure 4.3 sets out the ethnic make-up of North Shore City, compared to the Auckland region and the rest of New Zealand.

Figure 4.3 Ethnic Groups - North Shore City, Auckland Region and New Zealand (2001)



Source: Statistics New Zealand

Note: Refer to Statistics New Zealand, Auckland Regional Council, North Shore City Council and their websites for fuller and up to date statistics related to North Shore City.

4.3 Resources of the City

4.3.1 Geology and Soils

The city's landforms are a result of both volcanic and tectonic forces, modified over time by the continuous natural processes of erosion and deposition.

The volcanic landforms of the city consist of scoria cones and explosion craters. Three cones occur in the Southeast in the Devonport area and three explosion craters occur in the Takapuna-Northcote area.

North Shore City is built over land that is largely composed of a sequence of alternating sandstones and mudstones called the Waitemata Formation. These rocks are readily seen in the cliffs around most of the city's coastline. They were deposited at considerable depth on the floor of the sea about 20 million years ago and have since been hardened into soft sandstone and mudstone rock, then uplifted and eroded to form the present land areas.

The soils of North Shore City fall generally into three main groups:

- *Red brown loams (basaltic) found in Devonport, Milford and Barrys Point Road*
- *Podsolised yellow/brown earth and podsoles found in Northcote, Glenfield, East*

Coast Bays, Paremoremo/Albany and Greenhithe

- *Strongly leached yellow and brown soils (clay) found in Birkenhead, Highbury, Birkdale, Beach Haven and Sunnynook.*

These soil patterns contribute to variations in the vegetation pattern and landscape character through the city.

4.3.2 Vegetation and Wildlife

The area's volcanic history, and later human occupation, has been responsible for the loss of much of its original vegetative cover. Typically the original sub-tropical rain forest cover would have consisted of mixed podocarp-broadleaf forest.

Kauri is still prominent in areas of the North Shore, particularly on well drained warm slopes and ridges, while rimu is more prevalent on damp sheltered slopes and terraces. Kahikatea is found along damp coastal margins, for example Tuff Crater and Onepoto Basin. Totara is found in drier sites, sometimes where recent ash or volcanic activity dictate the soil type.

With the expansion of urbanisation in North Shore City to its present extent of two thirds of the total area of the city, pre-settlement vegetation and wildlife habitats have been significantly reduced. However, the city still contains bush areas which are remnants of the past, more extensive bush cover, and also supporting areas of regenerating forest. These exist within both urban and rural areas.

Significant habitats include the following:

- Coastal wetlands such as the Lucas Creek mangroves and salt marshes
- Freshwater wetlands comprising water bodies and raupo marshes
- Open coastal habitats extending from Long Bay to North Head
- A large number of areas of bush within urban and rural areas that are remnants of a more extensive cover.

4.3.3 Coastline

The city has 160 kilometres of coastline, ranging from the sandy beaches and sandstone cliffs of the Hauraki Gulf to the steep bush-clad escarpments of the upper Waitemata Harbour. The coastal processes which have formed the coastline, its ecology and vegetation, particularly the pohutukawa, are elements which contribute to the coastal environment. The eastern cliffs are eroding at a rate estimated to be between 1.1 - 7.5 metres per 100 years depending on the measurement used. The rate of erosion varies considerably between different sites, depending on the structure of the sediments, slope, water levels, vegetation cover and structural loading. Many of the residential areas in the city have a coastal orientation. The coastline is a significant recreational asset for North Shore residents.

4.3.4 Water Quality

There are approximately 50 streams on the North Shore, with around 20 of those within the urban environment. North Shore streams are typically short being a few kilometres long and 1-3 metres wide.

All urban streams within North Shore City are modified to some degree. They have had their banks modified and natural flow rates altered by development within their catchment. They are often subject to contamination from general urban runoff and accidental spills. However, a number of the urban streams do support diverse communities of fish and macro invertebrates by providing valuable habitat.

Lake Pupuke is highly valued as a recreational and significant wildlife area. Data indicates that the quality of the lake water is generally reasonable, however its quality is vulnerable to change.

There are two distinct types of marine environment around the North Shore coastline. There are significant areas of mudflats, estuaries and mangroves, which have high ecological values. There are also long stretches of beaches that are highly used for recreation, a marine reserve in Long Bay and a marine park throughout the Hauraki Gulf.

In recreational beach areas, bacteria and viruses can pose a risk to human health. While the microbiological water quality is generally good, exceedances do occur as the result of a number of factors interacting such as wastewater overflows, strong winds and one off pollution events.

4.3.5 Air Quality

Within the city there is a risk of localised air pollution at times of significant increase in contaminant emissions to air, because of localised inversion conditions in the Albany Basin. It is probable that vehicle emissions contribute the most significant localised form of air pollution within the city. In addition, home heating contributes up to a third of pollutants measured during the winter months. Backyard burning is another localised source of poor air quality. There has also been an odour problem associated with the sewage treatment plant in the past. However, an upgrade programme was initiated in 1989 with 3 stages having been completed by 2002. This has led to a steady decline in the emissions of odour and a works programme is continuing to further improve the situation.

4.3.6 Landscape

The variety of North Shore City's coastline with its sandy beaches, rocky shorelines, sheer cliffs and tidal estuaries makes a strong contribution to the city's natural landscape features which contribute to its character. Volcanic activity has resulted in both cones (North Head and Mount Victoria) and craters (Lake Pupuke, Tuff Crater, Onepoto Basin). The city is also characterised by steeply dissected valleys oriented to the upper Waitemata Harbour in the west as well as more open valleys and headlands oriented to the Hauraki Gulf in the east. There is also a tendency for the distribution of native vegetation within the city to reinforce this east-west difference, with the more intact remnant vegetation remaining on steeper land in the west. At a more detailed level, the pattern of creeks and streams throughout the city is a further important natural component of the urban environment, adding to the landscape's diversity.

4.3.7 Tangata Whenua

Maori have had a long association with the North Shore and Maori settlements existed until the early part of this century. The area now occupied by the city was the scene of a complex pattern of successive occupation, migration and conquests, so that today a number of iwi have associations with the area. There are many places and sites of special significance to iwi within the city. The best known of these include pa sites at:

North Head, also referred to as Maungauika. The volcanic cone was extensively modified over almost its entire surface by Maori earthworks, although much of this has been substantially modified, largely by European fortification. The best remaining prehistoric earthworks are on the eastern side of the cone. Little visible evidence of Maori occupation has been found, which suggests that the site was used as a refuge rather than as a site of permanent human habitation.

Mount Victoria, or Takarunga, is associated in tradition with Maori occupation extending over nine centuries. On the northern and eastern slopes, terraces and pits can still be seen, associated with dwelling areas and kumara storage, and evidence suggests that the lower slopes were used for gardens.

Kauri Point, where the names of three pa sites have been recorded in the general area. Excavation of the headland pa in 1971 revealed that the pa appeared to have been only briefly occupied by people who left few traces of their presence.

Castor Bay, where the remains of Rahopara Pa occupy the northern headland. Occupation of the pa appears to date back as far as the fifteenth century and to have occurred in two major occupations. The first occupation depended on the natural defences of the headland, had quite a large population, and covered the entire headland and promontory. At a later time, only one third of the original pa was in use and that part was used as a small fighting pa, with a small area at the southern tip of the headland having been protected by a deep ditch running from cliff to cliff, and an inner bank formation.

4.3.8 Cultural Heritage

Heritage values reflect the historic significance of the features of an area, including settlement patterns, culturally shaped landforms, archaeological sites, street layout, buildings and plantings. Pre-European settlement has shaped the landforms and left many sites of value, European settlement has later contributed to the city's unique character. Many places and structures have served to define later patterns of development. The Victorian industrial complex of the Chelsea Sugar Refinery has led to the growth of the Birkenhead area. Devonport, Northcote Point and Birkenhead Point are ferry settlements each with their concentration of Victorian and Edwardian housing types. The Devonport Naval Base is an important military anchorage for Auckland and was serviced by the Stanley Point area. North Shore City's strategic coastline has led to a range of defence structures. Other important heritage buildings and places exist beyond these areas.

4.3.9 Residential Areas

The present settlement pattern on the North Shore reflects four main historic influences:

- *the North Shore's location as part of wider metropolitan Auckland*
- *the evolution of urban transportation*
- *the pattern of local government*
- *the availability of land to accommodate the preference of New Zealanders for single dwelling units on sections of a sufficient size to provide for open space, a garden and privacy.*

Early residential development focused on ferry services to Devonport, Northcote and Birkenhead, with smaller settlements also located around the coastline. Over a period of time, development extended into other locations along the coast, as a result of improvements to passenger transport especially with the introduction of the petrol driven bus and the North Shore's expanding role as a dormitory suburb for a growing metropolitan area.

The opening of the Harbour Bridge in 1959 led to motorway development which merged the growing inland areas of Glenfield, Birkenhead and East Coast Bays. Change within these areas has been occurring on a site by site basis through redevelopment and infill. Glenfield, southern Albany and much of Birkenhead and East Coast Bays present a newer urban character, the product of urban growth during the 1960s and 1970s. New development is continuing, in particular in Glenfield and Albany through residential subdivisions.

Most of the city is now urbanised, and the larger proportion of the urbanised area has been developed for residential purposes. The residential areas are characterised by:

- A physical separation between North Shore City and other parts of the Auckland region imposed by the coastal and rural fringes of the city
- Generally a very high standard of residential amenity due to the proximity to the sea, abundant trees and attractive views
- A diversity of residential character which derives from both the natural and built environment, and which has partly resulted as a consequence of separate administrations in the past. Residential areas range from Devonport with its heritage buildings, maritime atmosphere and volcanic cones, Birkenhead with its bush-clad gullies and harbour views, East Coast Bays with its beach orientation around individual bays, to the modern residential suburbs of Glenfield and Albany
- A growing intensification of residential uses around existing town centres such as Birkenhead (Highbury), Browns Bay, Takapuna and Albany.

4.3.10 Business Areas

The earliest business areas on the North Shore were the small shopping centres which sprang up to service the coastal settlements. As residential development continued to spread, each of the five former administrative areas developed its main retail and administrative centre. These were: the township of Devonport in Devonport Borough;

Highbury in Birkenhead City; Northcote Shopping Centre in Northcote Borough; Takapuna in Takapuna City; and Browns Bay in East Coast Bays City. In the present city, Takapuna has the status of a sub-regional centre with the rapidly growing Albany centre proposed to become a sub-regional centre. The others, being smaller in size, rank as suburban centres.

The early settlement pattern and passenger transport system focused on residents' accessibility to employment outside the North Shore, in downtown Auckland. However, the Harbour Bridge provided the North Shore with its first opportunity (outside the port-related Naval Base and Chelsea Sugar Works) to attract industrial development seeking sites close to the port and railhead, as well as taking advantage of the North Shore's growing local market and labour force.

Industrial development came late to the city, but developed as the pool of available labour expanded. Much of the more recent business development has been sited to take advantage of a strategic location adjacent to the Northern Motorway. In 2001 over 18,400 business sites were located within North Shore City, providing over 83,000 full or part-time jobs. The principal industry within North Shore City was the property and business services industry, which accounted for over a third of all businesses within the city. The majority of business sites in the city are located in Takapuna, and in the Wairau and Albany Valleys, with major contributors being the existing suburban centres, North Shore Hospital and the Devonport naval facilities.

Today the North Shore is an urban environment of complex interactions. The city is becoming more self-contained in employment and other urban activities, while still retaining strong links with the remainder of Auckland region for certain specialist facilities.

4.3.11 Rural Areas

The rural areas of the city lie adjacent to its northern and western boundaries. The areas include Greenhithe, Albany, Paremoremo and Okura and comprise bush-clad hills and escarpments, rolling pasture land and pockets of horticulture and forestry activity. Small villages are located at Greenhithe, Paremoremo and Okura with Albany becoming steadily more urbanised. Most land is subdivided for rural lifestyle residences.

4.3.12 Open Space

Natural features such as the lengthy coastline and the volcanic cones make a significant contribution to the city's open spaces, and to its visual and conservation amenities. As at January 2000 some 2022 hectares, or 15.6% of the total area of North Shore City calculated to mean high water springs, was classified as open space and used for recreation or conservation purposes. Of this total, approximately 1635 hectares are Council owned or administered, over two thirds of which is protected as reserve under the Reserves Act 1977. Approximately 274 hectares are owned or administered by the Crown or other government agency for example North Head and Long Bay Regional Park. The remaining 113 hectares are held in private ownership for example the North Shore Golf Club and Three Streams Scenic Reserve.

4.3.13 Community Infrastructure

North Shore City has a vibrant community infrastructure and facilities are in high demand. There are 12 community houses/centres within the city which are used extensively by community, sports, recreation, cultural groups and organisations. A range of leisure services are available including gymnasiums, sports clubs, fields, courts and aquatic centres. The North Shore Events Centre has indoor seating capacity for 5000 people and is used as a base for basketball, gymnastics, sporting, cultural and music activities including international events. A large number of sporting organisations have international standard facilities such as badminton, netball, tennis, rugby and hockey. The North Harbour Stadium in Albany provides a regional and international sporting, recreation and conference destination.

The city's arts and cultural facilities include venues such as the Bruce Mason Centre and the Pumphouse Theatre, The Depot, Mairangi Arts and the NorthArt Gallery. A number of cinemas are available, as well as the city's library resources.

North Shore City contains a range of educational facilities from preschool through to tertiary facilities and community education organisations. Massey University, Auckland

University and the Auckland University of Technology each have campuses located on the North Shore.

The city contains numerous medical facilities including a regional hospital in Takapuna and the North Shore Hospice located nearby. The North Shore Memorial Park in Albany is the main burial, cremation and memorial location in the city, and renowned for its beautiful location and extensive grounds.

The city has a large number of Housing for Elderly People units that are in high demand as well as other accommodation provisions available for the needy.

North Shore City is made up of a number of communities that have formed around smaller town or village centres. These centres remain highly accessible and are characterised by the concentration of shops, services, entertainment and recreation facilities that provide a focus for a community and contribute to satisfying many of its needs and wants.

4.3.14 Infrastructure

North Shore City is well served by its roading system, in the form of a roading network which includes the Northern Motorway at the top of the hierarchy, through to approximately 640 kilometres of arterial, collector and local roads. The Auckland Harbour Bridge provides an essential connection to Auckland City and further south. The Northern Motorway and regional roads access the north while State Highway 18 connects with Waitakere City in the west.

Public transport services take the form of bus services throughout the city and to other parts of the region, as well as ferry services operating between Devonport, Stanley Bay, Bayswater, Birkenhead, Northcote, the Auckland central business district, Half Moon Bay, Rangitoto and Waiheke Island.

Although about half of North Shore residents (15 years and over) work on the North Shore, daily weekday commuting to the Auckland Isthmus has resulted in significant peak period traffic congestion, largely on routes connecting with the Harbour Bridge. In 2001, approximately 7% of North Shore residents used public transport for work trips.

The public work and network utility infrastructure is essential for the functioning of a modern city as is the transportation system and roading network. Some of the roading network and network utility systems such as water supply, wastewater, stormwater, energy and communication installations may be nearing their capacity and may have to be upgraded, or extended.

Bulk water is purchased from Watercare Services Limited (jointly owned by the six territorial authorities in the Auckland region), which has the primary responsibility for water treatment and quality. Watercare supplies the bulk water via over 30 supply points and over 90km of bulk water mains throughout the city. North Shore City Council distributes and manages the water from these supply points to households and businesses through a water reticulation system that consists of over 1200km of distribution and bulk water pipe mains.

The wastewater system owned and operated by North Shore City Council carries liquid wastes from households and businesses through local and trunk sewers to the Wastewater Treatment Plant at Rosedale where it is treated to remove organic matter and solids and to kill pathogens. The treated effluent is then disposed through a sea outfall pipe into the harbour. The wastewater treatment reticulation system includes over 100km of trunk sewers, over 1100km of local sewers, over 80 pumping stations and over 27000 manholes.

Stormwater is rain that runs off hard surfaces such as roofs, driveways and roads. It ends up in the streams and watercourses within the city and flows onto the beaches and into the harbour. The public stormwater system is owned and operated by North Shore City Council to cater for this runoff and to reduce flooding of properties and spillage directly or indirectly into streams, the wastewater system and the harbour. It comprises over 900km of pipeline, over 20km of lined channels, over 300km of natural watercourses and unlined drains, over 7400 manholes and over 60 stormwater detention ponds.

Household recycling and hazardous waste collection services operate in the city. Residual solid waste is disposed of to a privately owned landfill in Redvale. Alternative

waste reduction methods and landfill disposal options are being investigated for the future. There are two privately operated transfer stations, one located at Constellation Drive and the other in Devonport.

Energy and mineral resources are mainly imported into the city. The city is served by utilities providing telecommunication, electricity, gas and fibre optic cabling. There are no known oil, gas or coal resources within North Shore City. There is however, potential for the generation of energy from renewable sources such as solar or wind technologies or the production of biogas from wastes. The Wastewater Treatment Plant captures biogases including methane and carbon dioxide during the treatment process and generates energy for reuse at the plant.

Known mineral resources in the form of aggregates exist in the city's volcanic cones and crater rings. Some of these deposits have been quarried in the past, for example, Mt Cambria in Devonport and Smale's Quarry beside Lake Pupuke.