Tikipunga, Glenbervie and Vinegar Hill Road

Structure Plan

January 2009

Table of contents

1 Introduction

The Urban Growth Strategy, which was commissioned in 2002, identified a number of urban development issues around Whangarei City that needed addressing by Council and the community. The resulting recommendations were adopted in 2003 as an official Council working document.

The Strategy divided Whangarei City into eleven distinct areas for ease of reference and administration. These areas became known as Structure Plan Study Areas, with each having its own detailed study for planning purposes.

In each of these study areas, a number of public meetings were held with local residents and interest groups to discuss specific planning proposals. The land use proposals discussed in this report reflect the views of the community and Iwi, which were expressed during consultation meetings held in the Tikipunga/Glenbervie area.

Council commissioned a number of studies to determine the physical opportunities and constraints to development. These include, but are not limited to, geotechnical reports, landscape reports, natural hazards assessments, transportation, and heritage assessments. In addition, residents' views and aspirations were collated and analysed against these reports by technical experts from relevant Council departments for feasibility and funding perspective and the possible prioritising of potential development activities.

It is important to note that these proposals take a long term view, and their implementation depends on their eventual incorporation into statutory planning documents such as the District Plan and the Long Term Council Community Plan. It is also important to note that further feasibility studies may be required at the time of implementing some of the proposals, as circumstances changes with time.

Land identified for particular use in this Structure Plan is subject to legal processes of negotiated agreements, acquisition or designation. Council will ensure that due process is followed before any land use changes, as proposed in this Structure Plan, take place.

In terms of Council's policy on public/private plan change initiatives, landowners or developers are free to apply for District Plan Changes, using the recommendations identified in this Structure Plan, for areas where Council does not have such plans.

1.1 Purpose of Structure Plan

Structure planning is an important tool in managing the orderly growth of the community to assure that adequate public services are provided, important natural and cultural assets are protected, and the area remains competitive for jobs and investment. The structure plans are a direct outcome of the growth philosophy expressed in the Urban Growth Strategy for Whangarei, which was adopted by Council in October 2003. They are a method by which the growth philosophy can be implemented at the local level.

The goal of all structure plans is to make progress towards sustainable communities that offer a high quality of life and safety for all its residents, while ensuring efficient use of ratepayers' dollars and the long term viability of residential and business investment.

All structure plans are guided by three simple principles of land development to achieve these goals:

Transition	to provide for a more gradual transition of densities from urban to countryside, and limit impacts on the state highway system and economic viability of agriculture
Contiguous	to allow long term consolidation of the urbanised area by allowing densities to increase on the fringes in the future as the market demands
Infill	to promote infill development in areas that are now, or are planned to be, serviced.

This approach to designating land for new urban development will help protect essential economic, environmental, social and scenic values of the District and contribute to long term sustainable growth.

The Tikipunga, Glenbervie and Vinegar Hill Road Structure Plan is an example of 'integrated management' which brings together all of Council's functions in one plan for the Tikipunga area. The specific purpose of this Structure Plan is to provide for the sustainable management of the natural and physical resources of the Tikipunga, Glenbervie and Vinegar Hill Road area, in accordance with the aspirations of the local community and to the benefit of the wider Whangarei District.

To achieve sustainable and integrated management this Plan will:

- provide an overall land use plan for growth which is compatible with the infrastructure and environmental capacities of the area to sustain urban and urban fringe development

- show how economic, social and cultural matters are being provided for and managed alongside environmental considerations
- provide a co-ordinated approach to providing roading, sewerage, water, parks and other services within the study area.

By specifying those aspects identified above, the Plan will provide higher levels of predictability to developers, Council, the public and affected parties regarding the layout, character and costs of development for areas earmarked for growth or redevelopment within the study area.

1.2 Legal Status of Structure Plan

It is important to keep in mind that the Structure Plan is a non-statutory policy document. This means that the Plan is not required or enforced by legislation and the provisions in the Plan do not have statutory or legal status until they are incorporated into Council's statutory documents such as the Long Term Council Community Plan (LTCCP), District Plan, and Asset Management Plans.

However, structure planning is a technique that has gained acceptance in the Environment Court as a way of promoting the integrated management of environmental effects, and providing for the well-being, health and safety of current and future residents. While not a legal document, the provisions in a structure plan may be considered as 'other matters' when assessing a resource consent application.

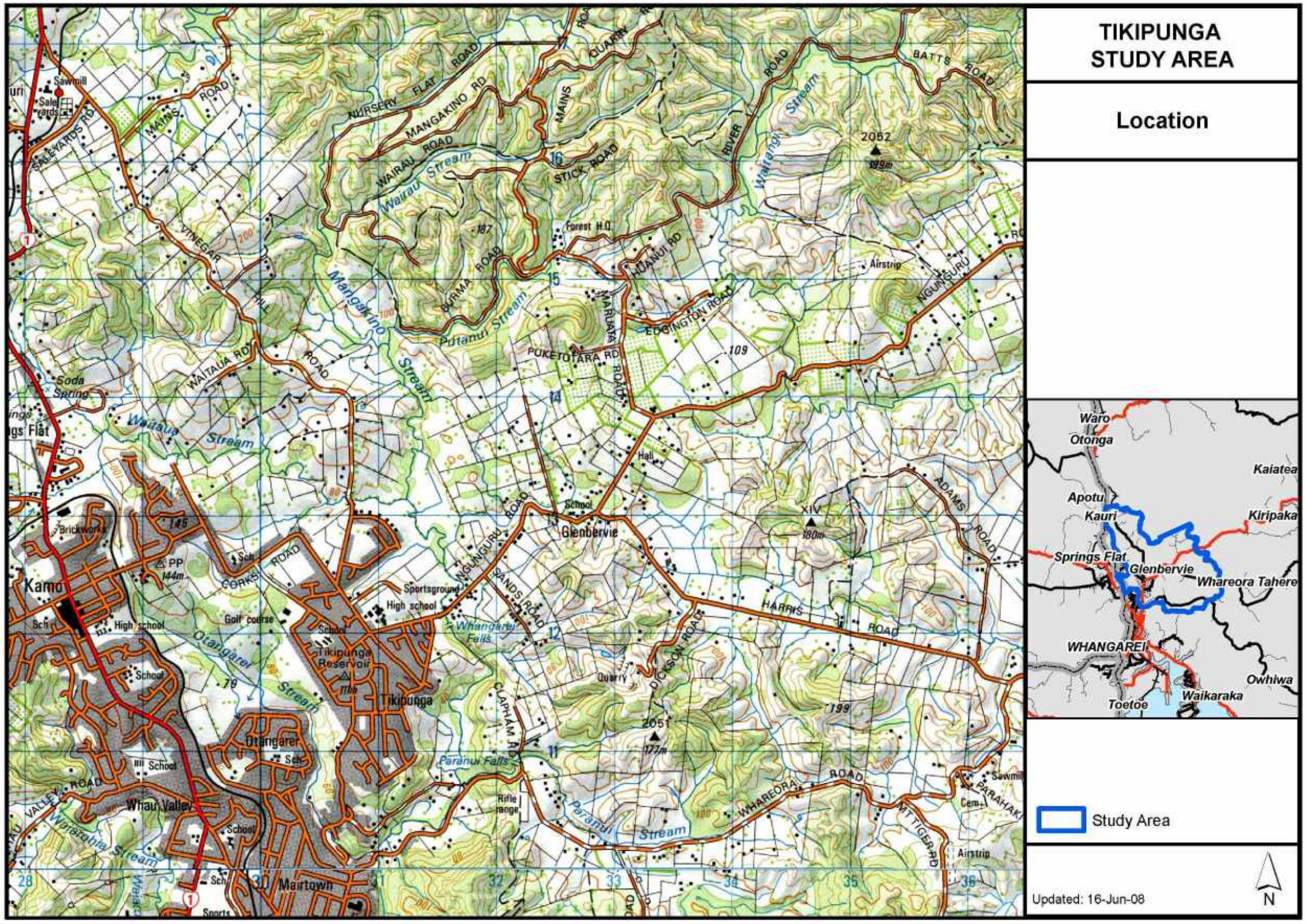
The structure plan itself, and the provisions contained in the Plan, are indicative only and are intended to guide future action. The structure plan will often seek to manage matters that are wider than those covered in the Resource Management Act and therefore are outside the scope of the District Plan.

A structure plan is an 'ideas' document, while the District Plan is a statutory document, or the 'action' plan. For the ideas in the structure plan to become actions, they have to be transferred from the structure plan to the various statutory documents. This is achieved by following a prescribed statutory procedure called a 'plan change'. This procedure provides opportunity for further public input and further changes to the structure plan's provisions, if required. The public will be notified of the consultation process for this future stage of the process.

1.3 Study Area

The study area of 3,540 hectares lies to the north east of Whangarei City and includes the shops at the Kiripaka Road roundabout and Paramount Parade, while encompassing the Tikipunga, Glenbervie and Vinegar Hill areas and a range of residential, recreational, commercial and rural land uses. It is depicted on the map included in Figure 1 below.

Figure 1 Structure Plan Location Area - Tikipunga – Vinegar Hill – Glenbervie



1.4 Public Participation

The Tikipunga, Glenbervie and Vinegar Hill communities were consulted on their visions for the future of their communities for the purposes of this Structure Plan. Consultation took place at a public workshop based in the community hall in February, 2004. The more than 50 attendees were asked to write and draw their ideas for the study area over the next 20 years and beyond. Meetings were also held with the Residents and Ratepayers Group, at which their plans for Tikipunga, Glenbervie and Vinegar Hill were also discussed. A summary of consultation for the Structure Plan can be found in the report: Tikipunga, Glenbervie and Vinegar Hill Structure Plan – Consultation Report.

A first draft of the report was presented to Council's Focus Group on 25 February 2008, with a second draft being presented on 25 March 2008.

A second round of consultation took place in April 2008. This round focused on the relevance of the earlier results in correlation with the current growth speculation. It also considered all the fringe Structure Plans, including the one for Tikipunga.

The final draft of the Structure Plan was presented to Council's Focus Group on 8 September 2008, with a third consultation day being held on 20 October 2008 at Tikipunga High School, in order to verify public views of the final draft. Feedback from the public has been taken into consideration in the drafting of the final recommendations of this report.

1.5 Tangata Whenua

Tangata Whenua are acknowledged as being the traditional guardians of the natural environment. Despite the development of local governance system and its responsibilities, Maori people have continued to carry out their part in management of resources in the traditional way and are active in protecting the natural integrity of the District's resources for future generations. There are many places of spiritual and cultural importance to Tangata Whenua in the Whangarei District, including waterways, waahi tapu, pa sites and other taonga. See Appendix 1 at the conclusion of this document for a full list of Sites of Significance to Maori in the study area.

Council recognises this special relationship of Maori people with their land and includes them as partners in the management of these resources. Tangata Whenua were specifically consulted for their input on the future of Whangarei as part of the Urban Growth Strategy carried out by Council. Hui were held at Terenga Paraoa, Pehiaweri and Ngararatunua Marae on 12, 19 and 26 April 2007.

Contributions and input from participants were collated, and feedback hui were held with kaumatua to ensure that the issues were recorded. A record of the issues was also sent to Council's Iwi Liaison Committee. A summary of the issues raised is listed in the Iwi Consultation Report. The proposals on the implementation of some of the issues are discussed in the Land Use Proposal section of this Structure Plan.

It is clear that the Whangarei Harbour is of great significance to Maori. In order to maintain the mauri (life force) and natural qualities of this harbour and its associated streams, it is imperative that the relationships between development and sustainability are balanced. In this case, the built form of suburbs/towns, such as Tikipunga, with its associated infrastructure (waste, roadways) must be balanced against the desire, particularly by Maori, to maintain and nurture the environment.

This means that Council, in partnership with Maori, must ensure that all land use applications are consistent with the values of sustainability. In words taken from a Maori world view: "Ina tiaki koe i te whenua, ka tiaki te whenua i te iwi" ("If you look after the land and waterways, the land and water will look after you"). This special relationship with Maori also acknowledges the need to protect the numerous sites of significance to Maori in the wider Whangarei Council District. This includes the waterways, waahi tapu, pa sites and other taonga such as significant flora and fauna.

1.6 Long Term Council Community Outcomes

How the Structure Plans Address LTCCP Community Outcomes:

1.6.1 A Sustainable, Environmentally-Responsible District which values its Natural Uniqueness

Structure plans guide land use of the District by proposing new zoning in areas best suited to support development. They strive to minimise loss of native biodiversity, productive soils, natural watercourses, scenic coastlines, and the sensitive aesthetic qualities of the District. Agriculture and forestry are considered as environmental as well as economic qualities as they are natural resource-dependent industries. Structure plans also promote alternative transportation modes which improve air quality, reduce green house gas emissions, and allow access to natural areas for more people.

1.6.2 A District which is Safe and Crime-Free

Structure plans indicate areas where new neighbourhoods will grow and those which will receive new investment. This new activity and investment enhances security by encouraging pedestrian traffic in commercial areas, increasing diversity, giving people new pride in their communities, and encouraging families to use community facilities close to home.

1.6.3 A Community which is Healthy and Educated.

Structure plans guide planning for new schools and community centres to areas where families are likely to settle. They also provide for recreational reserves, cycleways and footpaths for an active outdoor lifestyle and reduced auto dependence. Preserving natural areas contributes to air quality improvement, provides respite from urban life, and underlies the District's high quality of life. Structure plans also identify areas that will be serviced so that waste and stormwater will be handled in a safe and sanitary manner.

1.6.4 A Vibrant and Growing Local Economy

Structure plans identify areas that are suitable for business investment based on highway, water, rail and transit access; concentrations of compatible industries; identifying areas for new housing that are convenient to jobs; and recognizing growth trends in the District's major industries while minimising reverse sensitivity among land uses. By recommending preservation of rural lands, the plans also recognise the importance of productive horticulture, agriculture and forestry to the District's economy.

1.6.5 District with Community Programmes and Facilities for sll

Structure plans identify areas for new residential development where community facilities can be planned to serve new populations most efficiently. The structure plans include population projections to determine whether existing facilities are adequate for their areas.

1.6.6 A Community which values its Culture and Heritage

Structure plans take into account the sensitive nature of taonga and waahi tapu and seek to minimize impacts on it, while increasing knowledge and appreciation of the District's rich cultural heritage. Focusing new development around the urban area provides additional support for existing museums, the arts and tourist amenities. Preservation of environmental qualities – intact landscape, biodiversity, high-class soils, scenic values and coastlines – are a primary purpose of structure plans.

2 Development Strategy

2.1 Development Goals and Objectives

The recommendations conveyed as part of the Urban Growth Strategy have formed the basis for the urban structure plans. The Urban Growth Strategy identifies 16 Key Issues that require particular attention if we are to achieve the vision for Whangarei. These issues have been translated into specific objectives that will need to be accomplished in order to reach this vision. The objectives are supported by a range of policies and implementation methods that put these policies into action.

Strategic issues for each of the structure plan areas were identified in the Urban Growth Strategy. The following list shows the strategic objectives that apply to the Tikipunga, Glenbervie and Vinegar Hill Road study area, in particular, and presents the relevant policies.

Section		*Objectives* Policies	Relevant to Tikipunga area
1.1.1		The characteristic amenity values and the identity of each locality are maintained and enhanced.	✓
	1.2.1	To ensure that changes to urban form are compatible with the character, amenity and identity of the surrounding environment.	
2.1.1		The consolidation and development of the city centre.	
	2.2.1	To avoid sporadic commercial development.	
	2.2.2	To encourage the consolidation and development of the central business district.	
3.1.1		The importance of long term planning (including appropriate zoning) for industrial activities is recognised by Council.	✓
3.1.2		The potential adverse effects of industrial activities are mitigated by their appropriate placement and management.	✓
	3.2.1	To include policies and objectives in the District Plan relating to the importance of industrial development to the economic and social wellbeing of the District.	
	3.2.2	To have regard to the needs of industrial development when formulating other Council documents.	
	3.2.3	To avoid, remedy or mitigate the potential adverse effects of industrial development by their appropriate placement within the District.	
4.1.1		Accessible and convenient suburban centres are provided.	✓
	4.2.1	To provide suburban centres that are accessible and convenient without detracting from the central business district.	
5.1.1		Establish, maintain and enhance a safe and efficient road network.	✓
	5.2.1	To reduce conflicts between heavy vehicles and other users of the roading network.	
	5.2.2	To continue to develop a safe and n efficient roading network to meet the demands of urban development.	
	5.2.3	To minimise the effects of land use and subdivision on the safety and efficiency of the roading network.	
	5.2.4	To ensure adequate provision of parking in the central business district and in suburban shopping centres.	
6.1.1		Public transport, pedestrian walkways and cycleways are provided, maintained and enhanced.	✓
	6.2.1	To ensure that safe and effective cycleways are provided within the city, linking to and between suburbs.	
	6.2.2	To promote, develop and improve pedestrian walkways within urban areas.	
	6.2.3	To encourage the further development of public transport services.	
7.1.1		The provision of infrastructural services to existing and newly urbanised areas	✓

Section		*Objectives* Policies	Relevant to Tikipunga area
		in an efficient and effective manner.	
	7.2.1	To maximise development potential through the efficient provision of upgraded or new infrastructural services.	
	7.2.2	To avoid damaging environmental resources through ineffective, or lack of, infrastructural services.	
	7.2.3	To provide infrastructure in a way, and as necessary, to ensure the safety and wellbeing of the community.	
8.1.1		The risk associated with natural hazards is not increased by urban development.	✓
	8.2.1	To identify areas subject to natural hazards where urban development is likely to occur.	
	8.2.2	To mitigate, where possible, the effects of urban development on the risk of natural hazards occurring.	
9.1.1		The loss of productive soils and economic farming units is minimised.	✓
9.1.2		The effects of urban type subdivision on rural character are avoided, remedied or mitigated.	✓
	9.2.1	To recognise the value of productive soils and economic farming units to the District's economy.	
	9.2.2	To minimise the effects of urban type subdivision on rural amenity.	
	9.2.3	To create a new zone for rural residential use.	
10.1.1		Avoid conflict between incompatible land use activities as a result of subdivision and urban development.	✓
	10.2.1	Ensure that subdivision development is located and designed to reduce the potential for conflicts with the effects of existing activities.	
	10.2.2	To facilitate the separation of incompatible land uses through the location of District Plan Environments and Resource Areas, and specific requirements of subdivision and land use activities, e.g. separation distances.	
11.1.1		The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.	✓
11.1.2		The protection of the life-supporting capacity of ecosystems through the avoidance, remediation or mitigation of adverse effects.	✓
	11.2.1	To protect areas of high ecological value from the effects of urbanisation significant indigenous vegetation and significant habitats of indigenous fauna from the effects of urbanisation.	
	11.2.2	To ensure the protection of the life-supporting capacity of ecosystems through avoiding, remedying or mitigating adverse effects.	
12.1.1		Sufficient open space is provided to meet community, conservation and recreational needs.	✓
	12.2.1	To provide sufficient open space to meet community, conservation and recreational needs.	
	12.2.2	To ensure linkages are created between areas of existing open space and any new areas created.	
13.1.1		Form a partnership with Tangata Whenua that enables effective participation by Tangata Whenua in planning processes.	✓
	13.2.1	To establish consultation protocols with Tangata Whenua, which are agreed to by all parties.	
	13.2.2	To improve the relationship between Council and Tangata Whenua.	
14.1.1		The prevention of the degradation and loss of historic and cultural sites of significance from urban development.	✓
	14.2.1	To avoid, remedy or mitigate the adverse effects of urban development on heritage areas significant to Maori and on Sites of Significance to Maori.	

Section		*Objectives* Policies	Relevant to Tikipunga area
	14.2.2	To encourage the development of a procedure for the identification and recognition of sites of cultural significance to Tangata Whenua.	
	14.2.3	To protect historic places, sites (including archaeological sites), buildings and trees from the adverse effects of urban development and subdivision.	
15.1.1		Access to education and employment opportunities is enhanced as a result of urban growth.	✓
15.1.2		Access to recreational, artistic and cultural opportunities is enhanced as a result of urban growth.	✓
	15.2.1	To encourage the provision of education and employment opportunities.	
	15.2.2	To encourage the provision of recreational, artistic and cultural opportunities.	
16.1.1		Create a better image of Whangarei.	N/A
	16.2.1	To improve the image of Whangarei as seen by residents and people outside the District.	
	16.2.2	To encourage and co-ordinate community organisations in the promotion of Whangarei.	

2.2 Strategic Options

Council has a legal responsibility to manage future growth and development of the District, and it has several options available through which to do this. These are:

- develop plans and policies to guide development that maximises quality of life and minimises impact on neighbours and the environment
- enact subdivision regulations that control the specifics of section sizes and layout, guide provision of public infrastructure, and ensure the health and safety of the District's residents and businesses, or
- do nothing; rather allow each individual a free hand in determining what, where and when development takes place.

Council has chosen to develop plans such as this one, in combination with subdivision regulations, in the recognition that the private market serves the District in providing living and job opportunities to its citizens. Such policy documents as this Structure Plan, along with other policy plans, facilitate:

- co-ordination of development, over time, to sustain the District's unique identity, economy and neighbourhoods
- the planning of efficient investment of the public's resources for new infrastructure
- a degree of predictability for residents and developers as they make location and investment decisions, and
- the participation of citizens in their government's decision-making.

This Plan has been prepared to create a better living environment for the residents and future generations of the Whangarei District. What follows is a detailed explanation of proposed changes for this study area.

2.3 Spatial Development Strategy

The overall proposed spatial strategy is based on the following broad directions:

- providing a progression of living environments, beginning with high-density urban areas on the commercial fringe, then leading to medium density urban areas and then to rural residential zoning on the fringes of the urban area, and retain rural zoning beyond the rural residential zone
- recognising that there need to be restrictions on urban and rural residential development in sensitive ecological, geological and landscape areas
- recognising that there need to be restrictions on urban, rural residential and commercial development in areas subject to natural and man-made hazards such as mining hazard zones, instability areas, flood prone areas and contaminated sites

- providing for a network of pedestrian and cycle links throughout the study area, and to surrounding suburbs and the city
- providing for reserves to meet different recreation needs, such as neighbourhood parks, sport grounds and esplanade reserves, and ensuring linkages are created between these areas.

3 Current Profile

3.1 Regional and District Context

The Whangarei District covers the south-eastern end of the Northland region. It is a District with a total population of approximately 74,250, encompassing a growing city of over 48,000 people. Around half of the total Northland population lives in the Whangarei District, with Whangarei City being the largest urban centre in Northland.

Whangarei District is less dominated by urban growth than Auckland and other regions in New Zealand. Approximately 65 per cent of the District's residents live in the urban centre of Whangarei. However, two out of three new residences are being built outside the urban centre.

The economy of the Whangarei District has been steadily growing in recent years. The leading growth industries are agriculture, forestry, wood processing, healthcare, tourism, fishing, property and business services and education.

In October 2003, Whangarei District Council adopted the Whangarei Urban Growth Strategy. This document recognized the need to manage growth in the District in a sustainable manner. The following vision for Whangarei was identified:

> *To be an accessible green city, where people can live, work and shop in safe and clean surrounds, where art and culture are celebrated, and leisure opportunities abound.*

The Urban Growth Strategy recognises the influence of national and regional strategies and policies. The Regional Policy Statement for Northland, the Regional Coastal Plan for Northland, the Regional Water and Soil Plan for Northland and the Regional Land Transport Strategy are identified as having particularly significant relevance.

The Tikipunga/Glenbervie/Vinegar Hill Road area was one of eleven identified in the Urban Growth Strategy as requiring structure planning to plan for and manage growth. At the time of this document's writing, the Tikipunga/Glenbervie/Vinegar Hill Road Structure Plan is being prepared simultaneously with four other urban fringe structure plans: Kamo, Otaika, Maunu and Onerahi, as well as 10 coastal structure plans. While each plan is a stand-alone document for its area, all the plans must be considered in the context of general growth trends for the Whangarei District as a whole. This means that recommendations for one structure plan area may have been made with consideration of conditions or changes in other structure plan areas.

Six additional urban structure plans will be prepared in the future.

3.2 Profile of Study Area

3.2.1 Historical Background

The original settlement of Whangarei began with the Ngapuhi tribe, who were descended from the voyagers of the Mamari Canoe that arrived at the Hokianga Harbour to establish the tangata whenua of the North.

Tikipunga was originally developed by European settlers as a farming district, but since the Second World War has developed into a thriving suburb of Whangarei and now contains busy commercial shopping centres, primary and secondary schools.

Vinegar Hill was named after one of its early settlers, John McLeod, son of one of the Nova Scotian pioneers. It is thought John McLeod was given the nickname 'Johnny Vinegar', because his land was the colour of vinegar or because of the vinegar-like sour tea made with water from the soda spring on his land.

Glenbervie was originally a Maori settlement called 'Pehiaweri'. The Pehiaweri Marae is a present-day centre for local Maori activity. Identified Maori heritage sites and other archaeological sites illustrate the heritage and cultural values of Glenbervie and the study area.

Glenbervie was the name of the Douglas estate in Scotland, and was gradually adopted for the whole area after Sir Robert and Lady Douglas donated land for a school. The first school in the area was the Huanui School, which opened in 1893. The school was moved to its present site on the land donated by the Douglas family in 1914, and was renamed Glenbervie School.

Glenbervie has always been a farming and fruit growing area, with Huanui Orchards as one of the early orchards still thriving in the area. Parts of the Glenbervie area are characterised by historic stone walls. These walls are made from volcanic rock that was collected and cleared from the land to allow for farming.

The earliest walls date back to 1850. It is reported that many of the stone walls were built by Dalmatian immigrants during World War I and the Depression, when work ran out on the gum fields. These stone walls still strengthen and define the distinct landscape patterns of the area.

In 1906, 500 hectares of land were gazetted for State Forest Purposes. The government added to this area by buying surrounding farmland. Planting of the Glenbervie State Forest began in 1947. By 1976, the State Forest consisted of 5,383 hectares, of which 3,450 were planted in pine. The Forest headquarters were based in Glenbervie. Today, the Glenbervie area is a sought-after lifestyle living area, being close to Whangarei City and east coast beaches. It also remains a farming and horticultural area.

The Whangarei Falls area divides Tikipunga and Glenbervie. This area was settled and developed as another farming and market gardening district.

In 1894, a Mr A. Christey proposed to harness the Whangarei Falls for generating electricity, but his application was refused by the warden. Since then, the Falls have been developed as a park, with walkways allowing visitors to view the Falls from different vantage points. Today, the Whangarei Falls are a popular tourist attraction.

The Proposed District Plan has identified a number of historic trees and buildings in the study area which are managed by means of the rules in the Plan.

Refer to Appendix 1 at the conclusion of this document for a full list of heritage trees and buildings in the study area.

Whangarei and this area were also influenced by mining. The Kiripaka Mine officially opened in May 1893 and the Hikurangi mines in June 1894, turning out a reported 150 tons a day. The Kamo coal mines are reported to have closed in 1894.

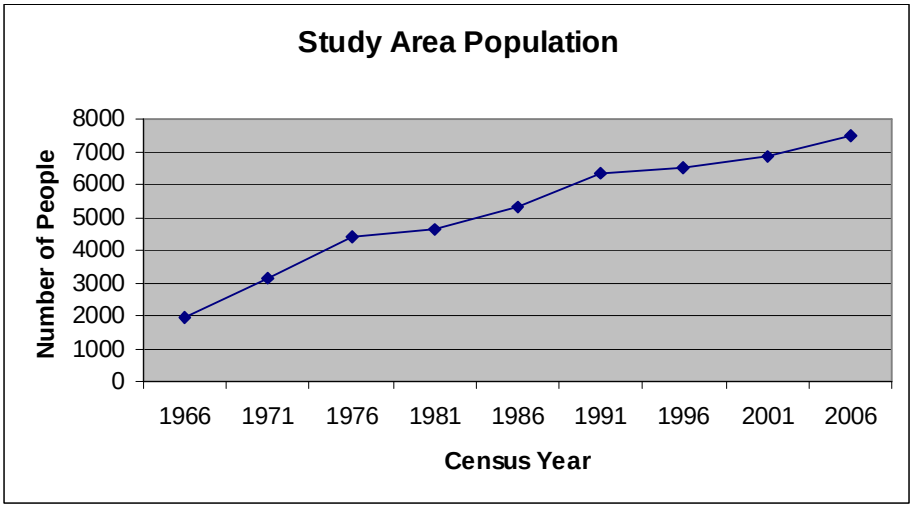
Mines, in turn, influenced the railway, as in 1892 the rail was extended from Kamo to Hikurangi, and in 1894 extensions led to Whakapara.

3.2.2 Population

The 2006 population of Tikipunga consisted of a total number of 7,677, with approximately 2,682 dwellings. This gives an average occupancy of 2.86 people per household, which makes the average household size larger than the rest of the city where 2.4 is being used. The following population graph (Figure 2: Study Area Population) shows a steady increase in the population of the area.

The majority of people reside in the residential areas around Tikipunga. However, there is a growing number of people living in the more rural areas of Vinegar Hill, Whareora and Glenbervie.

Figure 2 Study Area Population



Source: the latest statistics from Statistics New Zealand: 2007

3.2.3 Natural Features

a Topography and Landscape Characteristics

The landform varies markedly across the study area, with the more elevated land rising to some 200 metres at the northern and southern extremes of the study area, and a small, flatter portion in the centre where the Waitaua and Mangakino Streams converge.

The landscape of Tikipunga, Glenbervie and Vinegar Hill, is made up largely of pastoral land areas, contributing to its important amenity values with areas of fine ecological significance. The intricacy of the landform, its steep slopes and incised gullies, many of which retain large areas of bush remnants, scattered trees and groups of trees, characterise this historical landscape, predominantly zoned Countryside.

On its northern side is the Glenbervie Forest (Crown Land Reserve), Vinegar Hill and associated uplands. In its north-eastern corner, the Glenbervie area, smaller pockets of horticulture exist, typified by a more enclosed landscape character with shelterbelts and orchards (Refer to Figure 3: Character Areas). This volcanic character area extends along Ngunguru Road and comprises a mildly undulating landscape characterised by prominent volcanic knolls. Vinegar Hill Road extends north west along an elevated ridge. From this main ridge a number of sub-ridges extend to the north east and south west. A more substantial ridge is evident running parallel to, and to the south of, Mains Road.

According to Council's Landscape Assessment (LA4, 1995), the study area generally falls into two landscape types: firstly, rolling-to-steep pasture with pockets of scrub, and secondly, heritage landscapes. According to the Landscape Assessment, 2004, there are five distinct character areas, as shown in the Character Areas figure below:

- Vinegar Hill - upland vegetated / pastoral mix
- Harris Road - undulating pastoral
- Glenbervie - undulating vegetated / horticultural / pastoral mix
- Whareora - undulating vegetated / pastoral mix
- Urban Fringe - manicured golf course

3.2.4 Geology and soils

This section on geology and soils is adapted from several reports, "Parker, B. 1997: WDC Versatile Land", "Geology of the Whangarei Urban Area - 2003" produced by the Institute of Geological & Nuclear Sciences Ltd, and "Tonkin & Taylor Ltd 2006: Land Zonation Mapping Stability Hazard Mapping/Geotechnical Assessment Level and Effluent Disposal Potential for Kamo, Maunu, Onerahi, Otaika and Tikipunga".

The geology of the study area is dominated by five geological units (Figure 4 - geology). These are:

- **Waipapa Terrane**: Permian to Late Jurassic (140 to 200 million years) age rocks, strong shattered blue-grey sandstone ("greywacke") and mudstone outcropping in the north and central-eastern portion of the area.
- **Te Kuiti Group**: Eocene (24 to 36 million years) age rocks generally outcrops in the central and eastern areas, comprising:
    - **Kamo Coal Measures** – conglomerate, sandstone, mudstone, clay and coal
    - **Ruatangata Sandstone** – blue to green-grey glauconitic, calcareous muddy sandstone.
- **Northland Allochthon**: Early Cretaceous to Earliest Miocene (24 to 120 million years) age rocks, present at surface in the west of the study area, which have been transported a great distance from its original deposition, typically comprising:
    - **Undifferentiated** – highly deformed and chaotic predominantly sedimentary marine rocks (e.g. sandstone, mudstone and limestone)
    - **Whangai Formation** – differentiated from the general Northland Allochthon. It is a hard, dark grey, siliceous mudstone.
- **Kerikeri Volcanic Group**: Late Miocene to Late Pleistocene (~10 to 0.3 million years) age volcanic rock. They cover a significant portion to the north and west of the study area and are predominantly basaltic lavas and scoria cones (e.g. Puketotara). Many of the eruptive vents which produced this material can be identified, particularly where the vent is marked by a scoria cone. Volcanic rocks

around Glenbervie were erupted from Pukepoto and Puketotara scoria cones. A small flow which extended down to the locally dammed Waitaua Stream erupted from near the high point on Mount Denby. No clear source is apparent for the Tikipunga flows, but it may be inferred that these were erupted from near the highest part of the Tikipunga plateau. The volcanic rocks on Vinegar Hill were probably erupted from just north of the mapped area, though no vent can be discerned.

- **Quaternary sedimentary deposits**: Generally cover low lying ground typically comprising soft to firm alluvial sediments or swamp deposits.

There are a number of important geological sites and landforms in the study area (refer to Appendix 2: 6.2 for a full list of geological sites and land forms in the study area). These include the Glenbervie and Puketotara Cones, Whangarei Falls and Kamo Limestone relics.

The soils are, on the whole, a result of the weathering of the underlying (parent) rock. In this study area a significant proportion of the area is covered by clay loam of the Waipapa Terrane. Other soils in the area include sandy loams, clay loams and clays of the Te Kuiti Group and clays and clay/silt loams derived from Northland Allochthon units. The Kerikeri Volcanics Group are mostly weathered to clays, although in the north east of the area, the soils are mostly silt loams and bouldery silt loams The Quaternary sedimentary deposits tend to be made up of clays and clay loams.

The geology and soil characteristics of the study area influence effluent disposal potential of the land. The significant factors in determining the suitability of a site for effluent disposal are the nature of the soil profile, surface water and groundwater levels and movements (drainage), vegetation cover, net lot area, site specific landforms and local climate. The combination of these characteristics was designed to contribute to planning requirements in determining appropriate subdivision size, as well as targeting new areas for reticulation.

In the study area, soils derived from the Waipapa Terrane weather to a soil mass (or regolith) of very stiff to hard light brown gravelly and clayey silts. The residual soil derived from these materials (typically very stiff, silty clays and clayey silts) tend to contain non-swelling clays (i.e. they are not subject to large changes in volume due to changes in moisture content). These soils tend to display a moderate–to-poor effluent disposal potential.

The Te Kuiti Group display a range of effluent disposal potential. The products of the Kamo Coal Measures are slightly different from those found in Kamo in that they have weathered to sandy loams instead of the clays which are more common in Kamo. The sandy loams in Tikipunga have a good effluent disposal potential, however where pockets of clay occur, the disposal potential is poor. The Ruatangata Sandstone weathers to clays and clay loams which provide a low and moderate effluent disposal potential, respectively.

Northland Allochthon derived soils are commonly poorly and very poorly drained clays, with imperfectly to poorly drained clay loams and occasional silt loams comprising the remainder. These are typically mottled light greyish white, light yellow and light brown. The soils are also generally wet, highly plastic and of low strength. These soils have very low effluent disposal potential, particularly the clays. They also tend to produce unstable ground that may be further destabilised by introduction of fluids.

In the study area, the Kerikeri Volcanic Group mostly weather to clays, although in the north east of the study area, the products are mostly silt loams and bouldery silt loams. Drainage tends to be very good in areas underlain by scoria, but not so good where there are significant ash layers. In general, the volcanic rocks exhibit moderate-to-good effluent disposal potential.

The remaining soils in the area are Quaternary sedimentary deposits which are the result of estuarine and fluvial deposits during the Holocene age (~11,000 years), and generally cover low lying ground. The clays and clay loams which have developed from these in the study area have a low effluent disposal potential.

Soils are grouped into land use capability classes (LUCs), with a range of 8 classes (Figure 4 Land Use Capability). Class 1 (LUC I) comprises very productive, multiple-use land. This multiple-use continues through to Class 4 (LUC IV) soils. Class 5 (LUC V) soils are less suitable for arable use, but still have good pastoral or forestry potential. Class 6 (LUC VI) soils have moderate limitations for pastoral or forestry production, with Class 7 (LUC VII) soils having severe limitations. Class 8 (LUC VIII) soils are considered to be the least productive soils, being unsuitable for any cropping, pasture or forestry.

Around the Glenbervie area, the versatile (mostly volcanic) soils are moderately suitable for a range of productive land uses, particularly agriculture and horticulture. The relatively productive (LUC III-IV) soils like those found at Vinegar Hill, range from flat-to-undulating (LUC III) on the lower areas to the south, to rolling and strongly rolling (LUC IV) in the middle. Areas that contain strongly rolling-to-steep slopes (LUC VI) feature around the Gillingham Road extension (to the west) and toward the Glenbervie Forest (to the west).

Towards Glenbervie, in the east, and Whareora in the south, with the exception of a few pockets of unproductive soils (LUC VI), most of the surrounding soils and areas are mainly LUC III and LUC IV, which are relatively productive.

Other common soils found in this area include brown and red loams and, depending on the steepness of the land, these are suitable for land uses such as grazing and production forestry, bearing in mind that soils of LUC III are best suited for horticulture.

Areas immediately around the Tikipunga urban area are mostly flat-to-rolling (LUC III and IV) with some areas getting steeper to the south of the study area (e.g. around Kiripaka Hill, which is LUC VI). These areas contain brown and red loams, podozols and yellow brown earths, and are suitable for most land uses.

The Pukepoto and Glenbervie volcanic cones are classified as strongly rolling-to-steep (LUC VI), with soils that are mainly brown and red earths and unsuitable for cropping and horticulture. Production forestry or grazing may be suitable land uses here.

Figure 3 Tikipunga - Geology

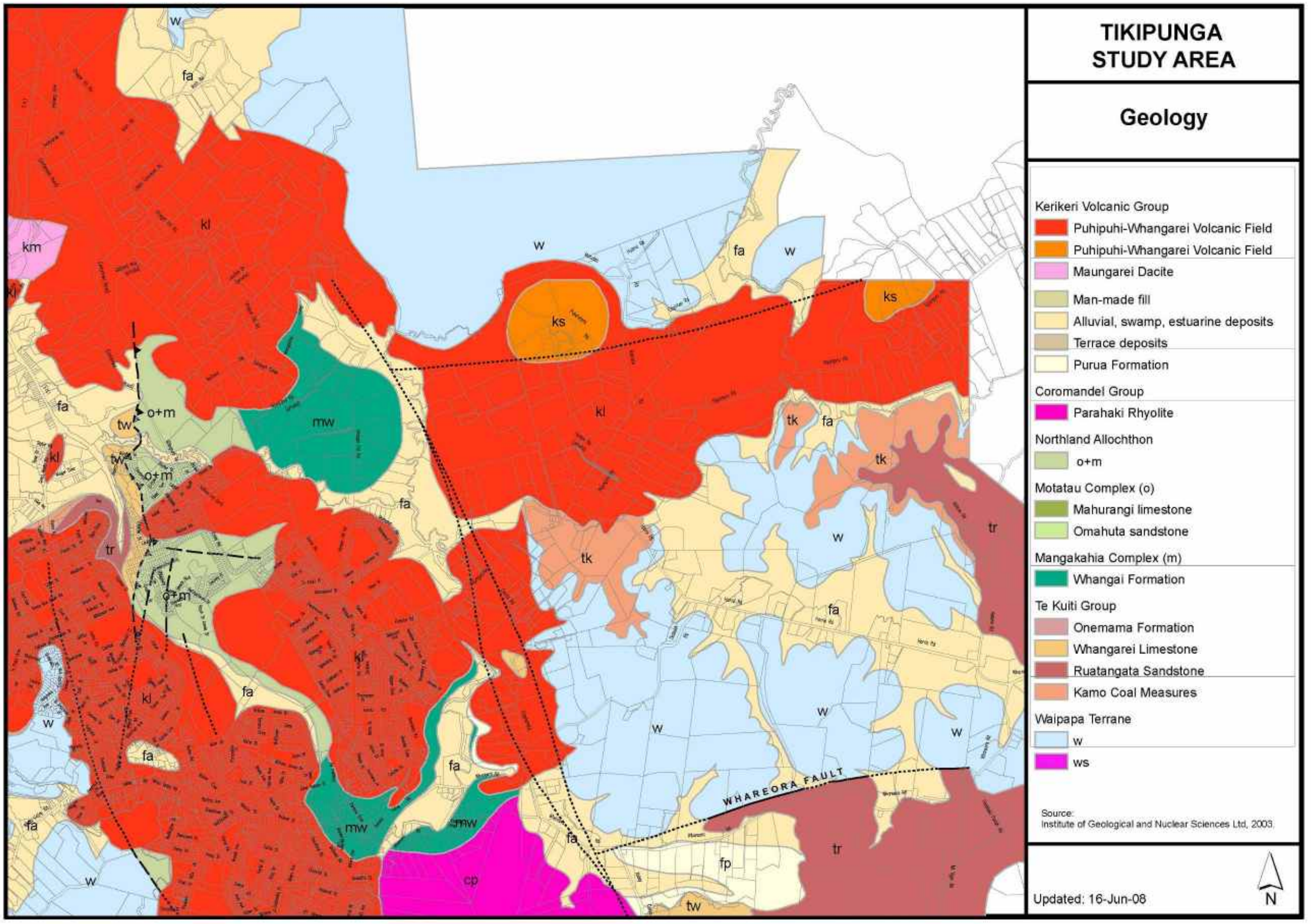
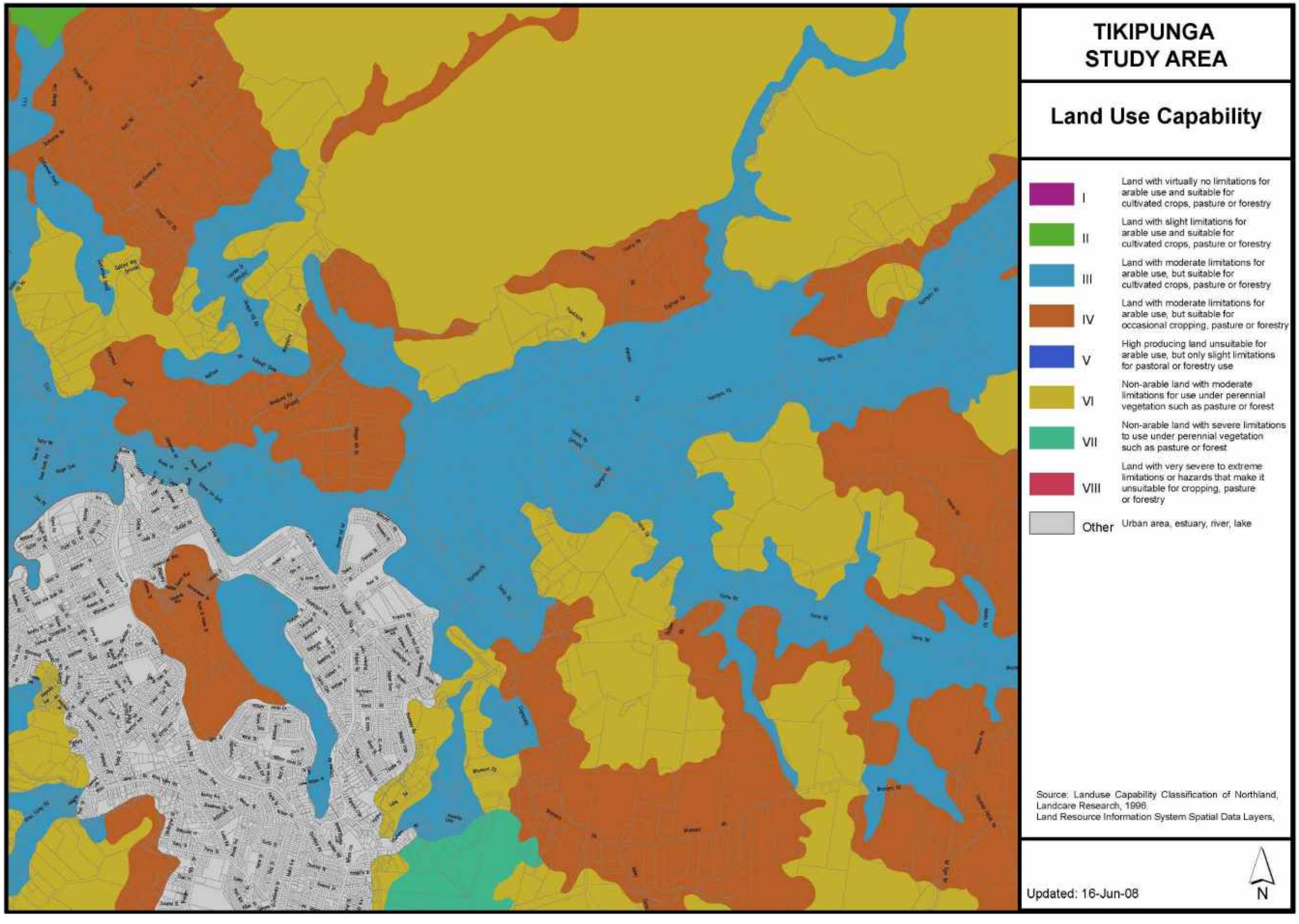


Figure 4 Land Use Capability



a Vegetation

The landscape's character is predominantly open with only limited vegetation evident. However, along Harris Road, where the built development is principally focussed, there is a greater dominance of exotic trees associated with plantings along field boundaries and within gardens.

Another feature of this character area is the shelterbelts associated with the horticultural land use. These create the small-scale sense of enclosure unique to this land use.

Much of the hilly terrain is dominated either by exotic or native forest, typified by the pine forest of Glenbervie that borders the northern boundary of the study area. Further, there are small areas of native forest scattered around the study area. The A.H. Reed reserve contains native trees and is in the south-eastern portion of the study area. Several stands of native tree species occur within the pasture land adjoining the majority of the length of the Hatea River.

Owing to the presence of the catchment area, some riparian vegetation occurs along the Taheke River tributary.

Ecology

Some ecological areas within this study area have been identified as part of the Protected Natural Area Network. While the priority areas for protection are those containing volcanic broadleaf forests, freshwater wetlands, riverine flood forests, estuarine systems and areas of kiwi habitat. Other habitats throughout the wider urban area are also recognised in the natural area study.

The aim of the Protected Natural Area Programme (PNAP) is to identify, through a process of field survey and evaluation, natural areas of significance throughout New Zealand, so as to retain the greatest possible diversity of landform and vegetation patterns (and thereby habitats). To achieve this, representative biological and landscape features that are common or extensive within an ecological district are considered for protection, as well as those features that are special or unique.

The ecological areas in this study area have a mixture of Podocarpus broadleaf forest, riverine forests and some totara forest remnants.

A range of threatened and common species has been surveyed within the PNAPs, including kukupa, peripatus, endemic snails, North Island kaka, grey duck, mallard, little shag, tui, fantail, silvereye, Australasian harrier, North Island Brown kiwi, grey warbler, New Zealand kingfisher, shining cuckoo and mistletoe.

The Structure Plan study area is in both the Whangarei and Whangaruru Ecological Districts. The following PNAP areas are found within study area:

Whangarei Ecological District

Site No	Site Name
06/153	Vinegar Hill Bush
06/157	Tikipunga Golf Course
06/158	Riverine Forest Remnants
06/166	Whangarei Falls
06/167	Ngunguru Volcanic Hill Reserve
06/168	Puketotara Hill Bush
06/169	Mangakino Stream

Whangaruru Ecological District

Site No	Site Name
07/001	Abbey Caves Remnants

c Hydrology

The area comprises a number of catchments and is rich in short streams. At the northern extreme of the study area, the main boundary between the Hikurangi Swamp/Wairua River and the Hatea/Pataua River catchments bridges the Vinegar Hill Road ridge.

The catchment area is mostly rural in nature, with large areas covered in exotic forest and regenerating native bush. The soils are generally poorly drained, which adds to the flooding sensitivity of various areas in this Structure Plan. Council has defined two main catchments in this study area for the purposes of catchment management: the Waitaua and Hatea Catchments. A portion of the Awaroa Catchment also falls within a small part of the study area, with the catchment draining away from the study area, The Hatea Catchment will not be investigated in this study in great detail.

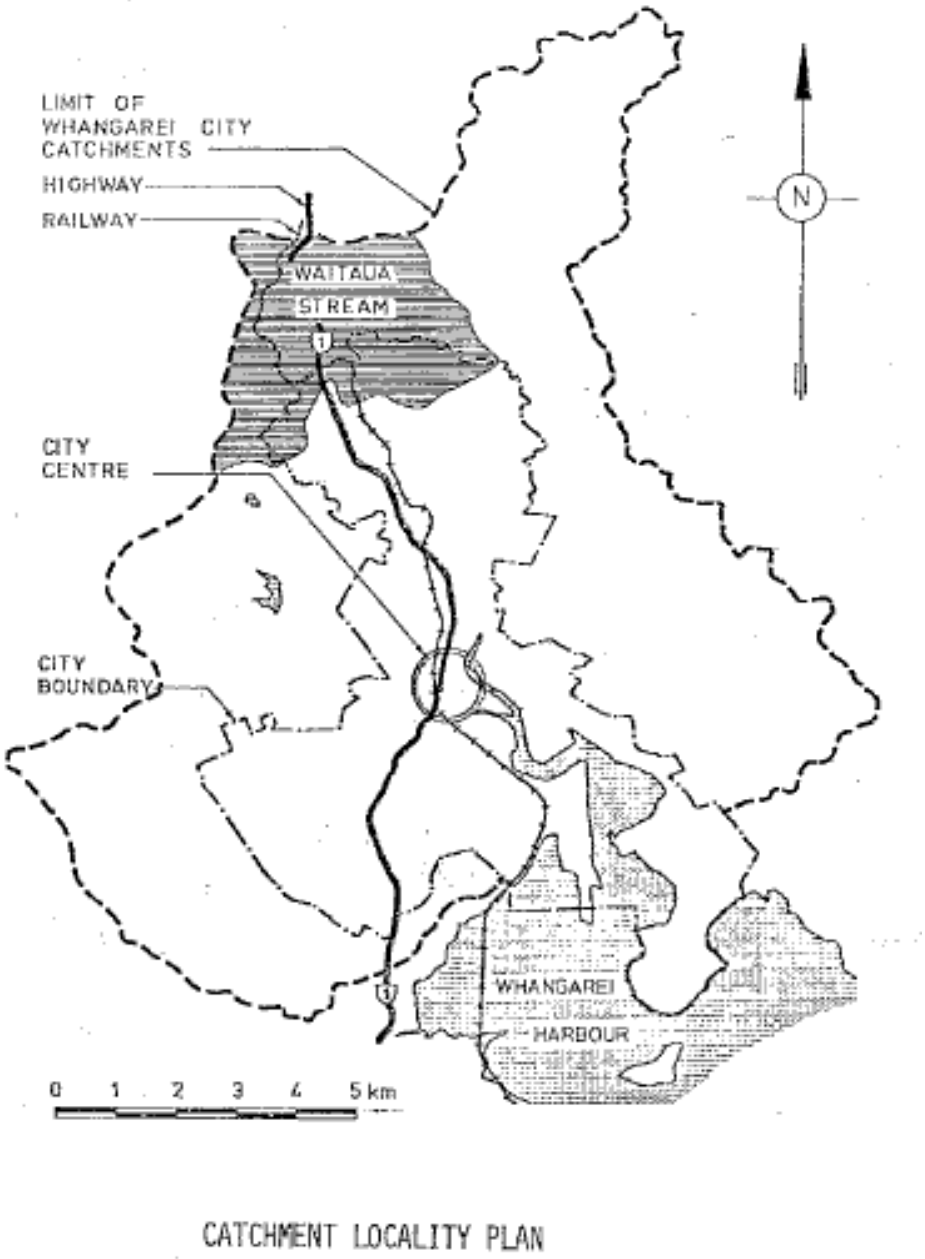
At the northern extreme of the study area, the main boundary between the Hikurangi Swamp/Wairua River and the Hatea/Pataua River Catchments bridges the Vinegar Hill Road ridge. Whareora Road follows the broad Paranui Stream valley from the edge of the city, east, to the watershed, some 500 metres west of the junction with Mt. Tiger Road. Numerous smaller streams feed into this valley from the north and south. The southern edge of the character area is defined by the elevated and pine-clad slopes associated with Mt. Tiger and Parihaka.

To the east of the study area, mainly in the Glenbervie area, the Northland Regional Council has identified an aquifer (a natural porous geological formation that yields water), that has a high actual or potential demand for water extraction. Around and on this aquifer, there are important considerations for development, particularly as there is potential for the aquifer to be contaminated by effluent disposal and for water extraction to exceed the recharge capacity of the aquifer.

The Waitaua Stream Catchment (see Figure 4, below) is to the east of the study area and is predominantly rural. Considerable riparian vegetation remains along many of the catchment streams, particularly in the lower catchment and on the main Waitaua Stream.

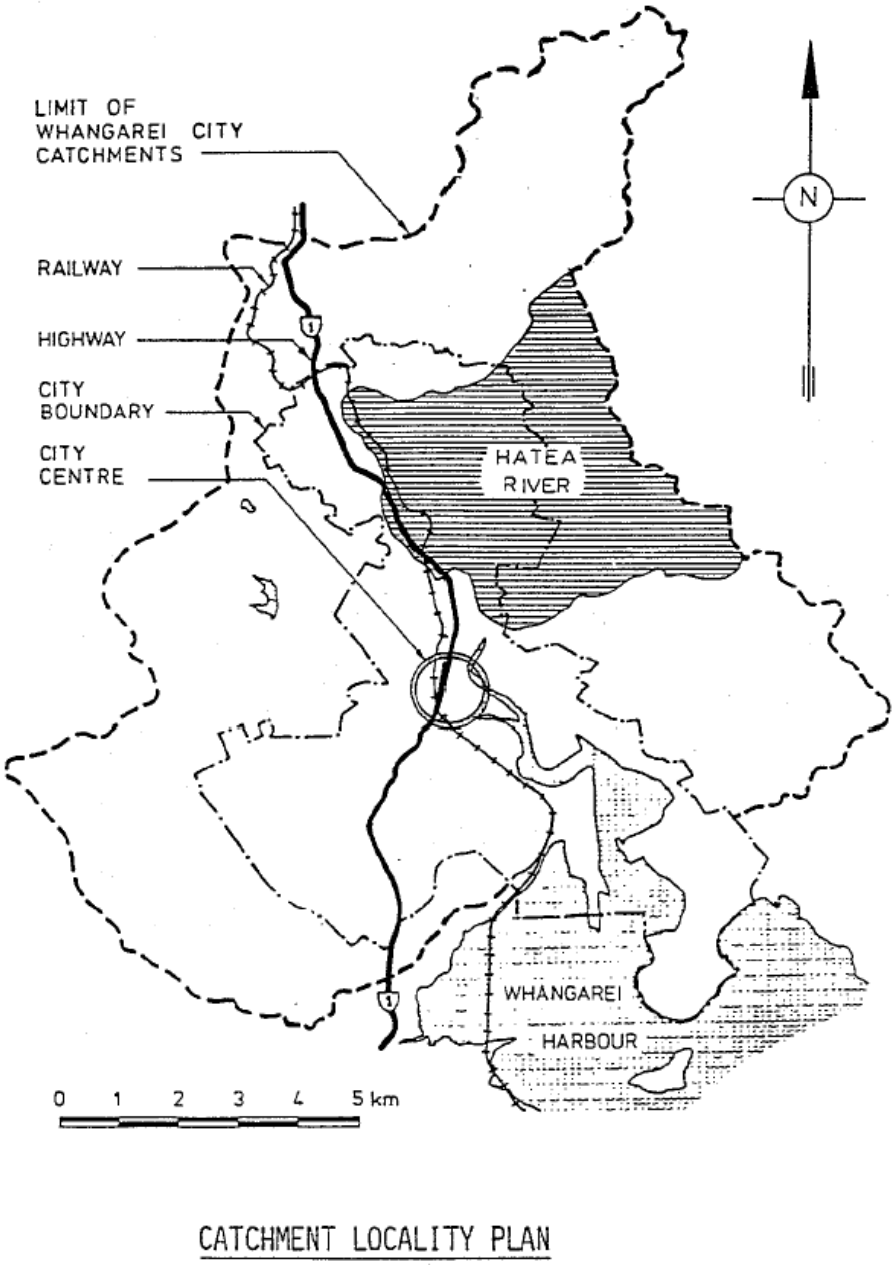
The Hatea River Catchment (see Figure 5, below) is situated to the north east of Whangarei City. It is a predominantly rural catchment, with considerable areas still in scrub and native bush.

Figure 5 The Waitaua Catchment



Source: Waitaua Catchment Drainage Plan, Tonkin & Taylor Ltd, Sept 1995

Figure 6 Hatea River Catchment Drainage Plan



Source: Hatea River Catchment Drainage Plan, Harrison Grierson, November 1997

d Flood Susceptibility

Locations of flooding susceptibility are identified on the Flooding-Prone Areas map (Figure 7 below). The Flood Susceptible Areas in the study area occur along the major drainage paths and streams in the area, notably the Mangahahuru Stream, the Mangakino Stream and the Waitangi River.

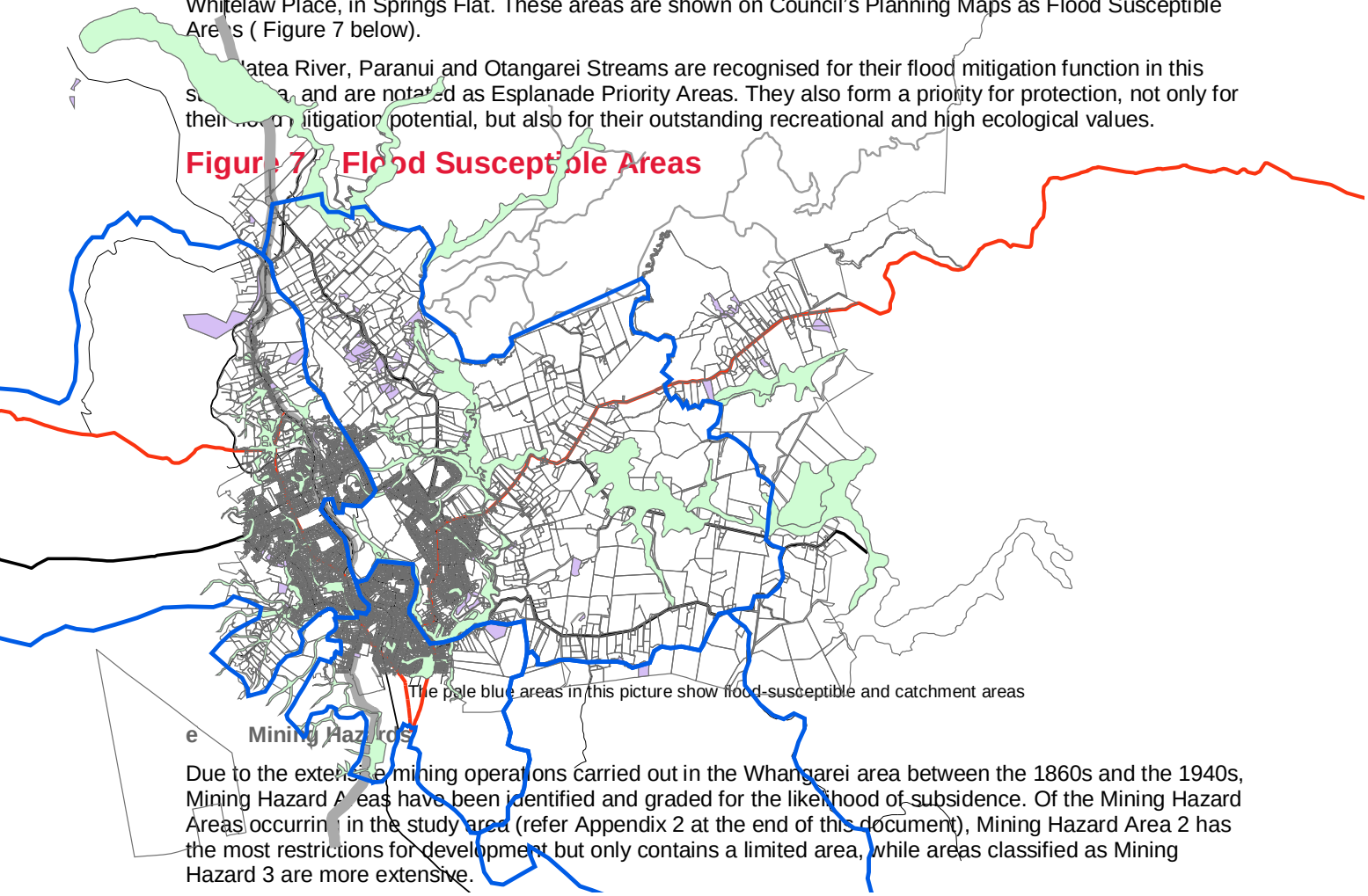
Flood susceptible areas include land which, on the information currently available, tends to flood due to rivers or streams overflowing their banks. They also include the areas of land where water has the tendency to pond in extreme wet-weather events which are typical of the Northland climate.

As can be seen in the map below, the majority of the flood susceptible areas can be found on land used for productive agricultural activities. However, an increasing number of lifestyle blocks are appearing in the area. These have the potential to cause a significant change in drainage patterns while also increasing the flood susceptibility of other low-lying land in the area. It is best practice to restrict these naturally flood-susceptible areas to solely productive agricultural use, and avoid further residential development of these areas. Any built development that is to occur on previously undeveloped sites should be designed with appropriately engineered building floor levels.

Flooding has been reported, in the past, on industrial land adjacent to Waipanga and Pipiwai Roads in Kamo, and further north on residential properties at Taylor Street and Rose Place, as well as in the vicinity of Whitelaw Place, in Springs Flat. These areas are shown on Council's Planning Maps as Flood Susceptible Areas (Figure 7 below).

Hatea River, Paranui and Otangarei Streams are recognised for their flood mitigation function in this s[illegible]a, and are notated as Esplanade Priority Areas. They also form a priority for protection, not only for their flood mitigation potential, but also for their outstanding recreational and high ecological values.

Figure 7 – Flood Susceptible Areas



The pale blue areas in this picture show flood-susceptible and catchment areas

e Mining Hazards

Due to the extensive mining operations carried out in the Whangarei area between the 1860s and the 1940s, Mining Hazard Areas have been identified and graded for the likelihood of subsidence. Of the Mining Hazard Areas occurring in the study area (refer Appendix 2 at the end of this document), Mining Hazard Area 2 has the most restrictions for development but only contains a limited area, while areas classified as Mining Hazard 3 are more extensive.

f Slope Instability

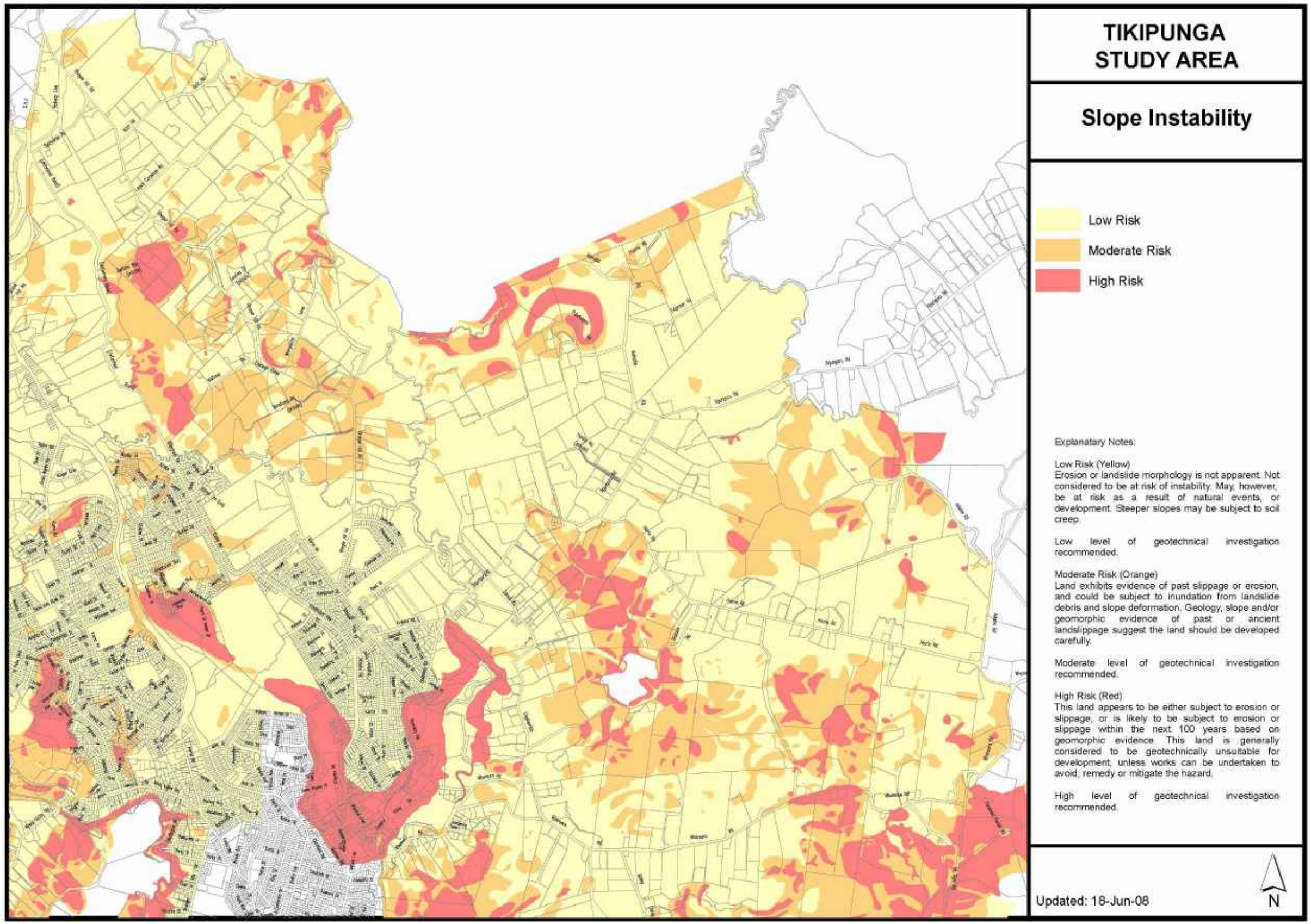
Slope stability (landslides) is assessed to be the most significant natural hazard in the Whangarei District. The dominant trigger is intense or prolonged rainfall. Most natural slopes developed on soft rock in the Whangarei District exhibit an undulating hummocky surface that is characteristic of soil creep and surficial slumping. Slope instability is common in the study area and there are large areas of creeping slope failures in some rock types (Figure 8).

Recently Tonkin & Taylor Ltd have undertaken numerous sub-regional land stability studies in the Whangarei District. These studies were undertaken to assess areas that were under development pressure. Accordingly, their report recommends applications for subdivision, building or other development, such as excavation, filling, removal of vegetation, disposal of stormwater or domestic wastewater into or over the area, may be allowed to proceed subject to consent conditions.

These conditions would include requirements for supporting geotechnical reports, including a stability assessment demonstrating to the satisfaction of Council, that the proposed development will not accelerate,

worsen or result in the land being subject to, or likely to be subject to, erosion or slippage. However, even with a geotechnical report, including a stability analysis, complete avoidance of all risk may not be possible.

Figure 8 Slope Instability Areas



3.3 Engineering Services and Infrastructure

Some of the proposals in this Structure Plan depend on the provisions of services and infrastructure to support the proposed activities. The Structure Plan gives an indication of where development is likely to occur in the future and, therefore, could be used as a long term planning tool for asset managers on the provision of services for development to occur in a co-ordinated manner.

a Water Supply

The urban areas of the study area and properties surrounding Vinegar Hill Road have access to reticulated water. The Whangarei City water supply area has four rivers of spring intakes: Hatea River, Poroti, Maunu Springs and Whau Valley Dam. (Figure 9)

Reservoirs within the study area are at Cobham Place and Waitaua Rd. In view of a higher density residential capacity and expectation, there is a new reservoir proposed for Vinegar Hill Road. Old Dip Road pump stations are situated at Whareora Road and Cobham Place (refer to Appendix 4, DW53, 63, 65).

Some upscaling of trunk reticulation will be required, including a new main into Tikipunga via Vinegar Hill Road. In addition, more storage will be required on Vinegar Hill. Some higher areas of Vinegar Hill may not be able to be serviced.

b Sewerage

Council's wastewater system comprises a trunk main (Hatea trunk main) which runs adjacent to the Hatea River and Waiatawa Stream through to the Springs Flat area. The Hatea trunk main has the capacity to service development on the western side of the Hatea River and the southern side of the Waiatawa Stream. Preliminary investigations are being undertaken to assess the cost and feasibility of duplicating the Hatea main to service any expanded residential development on the eastern side of the Hatea River and the northern side of the Waiatawa stream. (Figure 10)

Wastewater from the Tikipunga area is reticulated to the main Whangarei wastewater treatment plant which is situated on Kioreroa Road, south of Whangarei City. Reticulated sewerage and water have been installed as far as the marae. These services can, and should, be extended.

c Stormwater

Stormwater and flood water storage capacity, as well as the recreational, scenic and environmental significance of the catchment areas/flooding sensitive areas located within Tikipunga, Glenbervie and Vinegar Hill, form important parameters in considering implementing or changing the zoning in those areas. (Figure 11).

Stormwater flows will increase in the Hatea River as urbanisation occurs, but the limited extent of present development allows the opportunity to control flooding by using land use controls. Such strategies recommended in the Catchment Management Plan include:

- encourage the protection and enhancement of the riparian margin along stream channels
- maintain vegetation adjacent to natural streams to intercept sediment and protect against erosion
- require the issue of stormwater quality to be investigated in all significant future subdivision developments, as part of the consent process
- reserve floodways from development
- ensure that any reshaping or drainage still provides secondary flow paths to provide for escape of flows in excess of the capacity of piped reticulation
- provide for energy dissipation at outlets from piped or lined drains to protect against erosion.

The existing urban areas of the study area have a Council stormwater reticulation system in place, although a number of deficiencies exist. Further development would require stormwater systems to be designed to meet Northland Regional Council and Whangarei District Council standards before discharge to the local environment. No trunk stormwater systems exist beyond the existing Council-serviced areas.

d Electricity and Gas

The main grid electricity supply for Northland originates at Henderson (West Auckland) where it links to Marsden Point by 220kV lines. There are three points of supply in the Whangarei District at Bream Bay, Kensington and Maungatapere. (Figure 12).

Within the study area, there is also a substation at Waiatawa Road (refer to Appendix 3, DNP 8).

The main North Island natural gas pipeline from Wellington terminates at Kauri, north of Whangarei. It connects with a network of over 100 kilometres of mains in Whangarei City, Oakleigh and Marsden Point.

Power supply and gas reticulation traditionally follow development, which is also the case in this study area.

e Telecommunications

Telecommunication services also traditionally follow development and demand. In this respect, this study area is well catered for.

Telecom has advised they are expanding the ADSL (high-speed-internet or 'Jetstream') network in Northland. There is also a trend for increasing access to, and use of, wireless telecommunication services.

f Solid Waste

The study area is serviced by weekly household rubbish and recycling collections. Council operates a transfer station located in Kioreroa Road which is also designed to service the area. This facility at Kioreroa Road provides services focused on resource recovery to reduce residual waste to landfill. Currently, solid waste from this facility, and from the weekly collection services, is disposed of at a privately-owned landfill north of Auckland.

Figure 9 Water Services

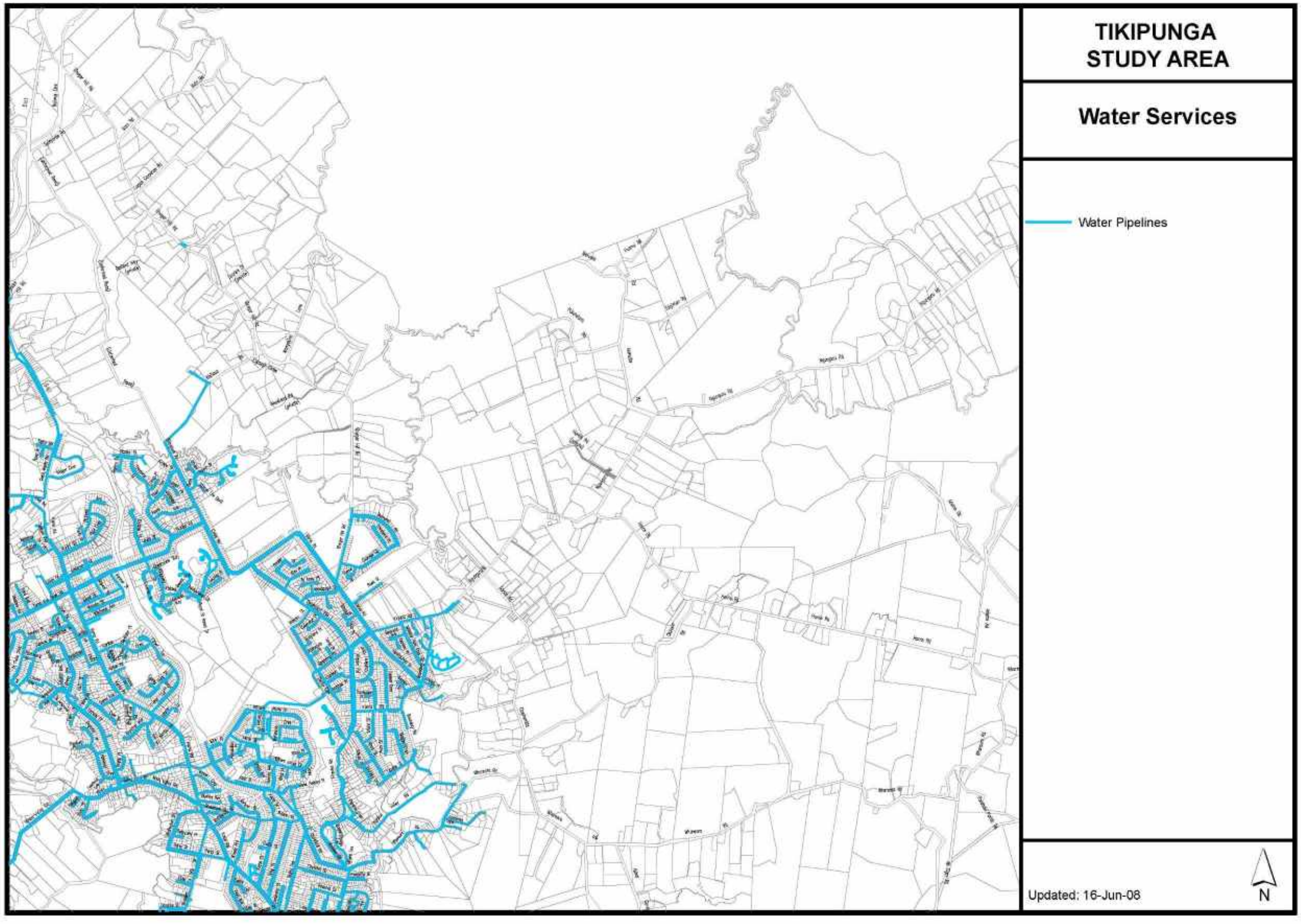


Figure 10 Wastewater Services

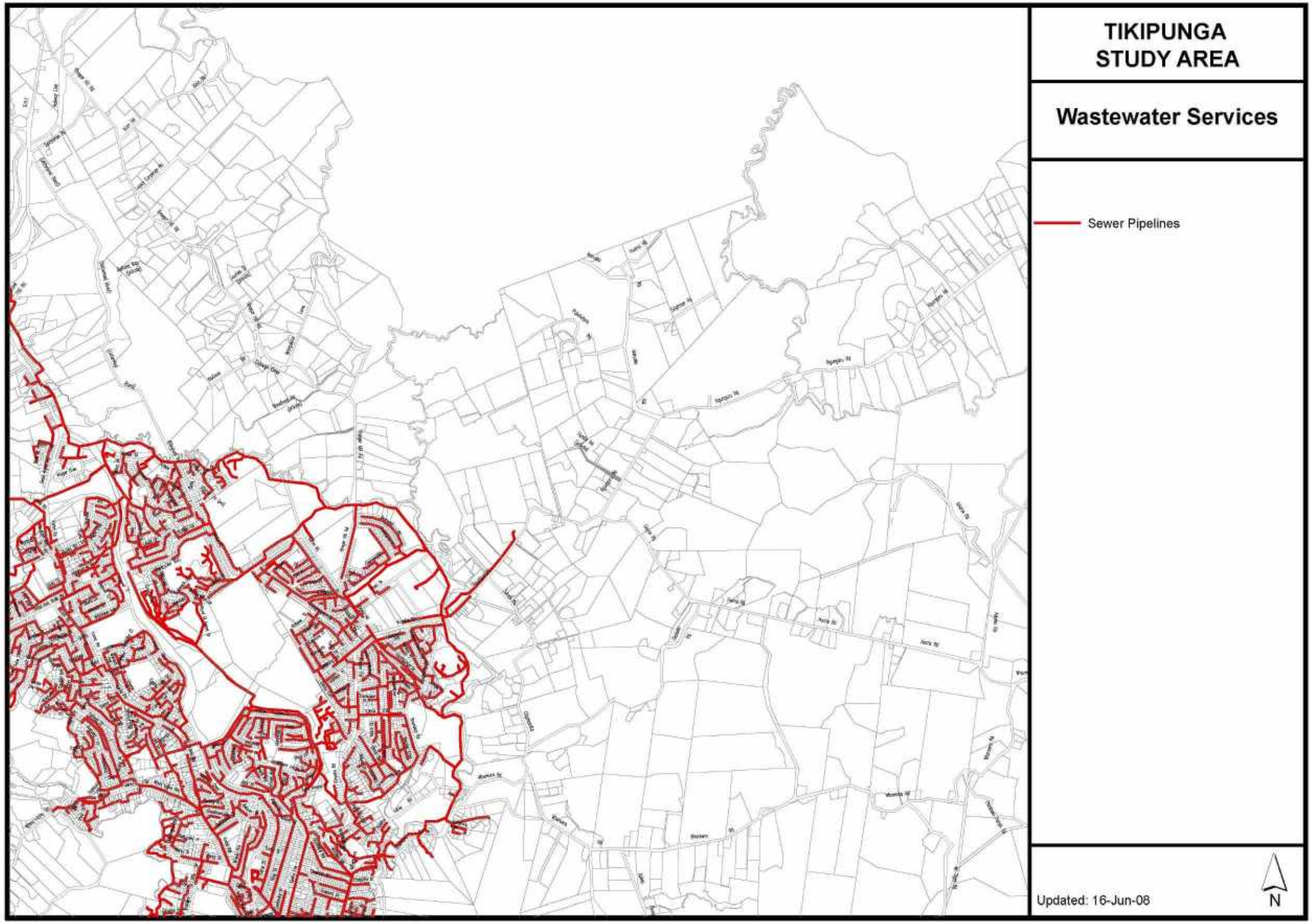


Figure 11 Stormwater Services

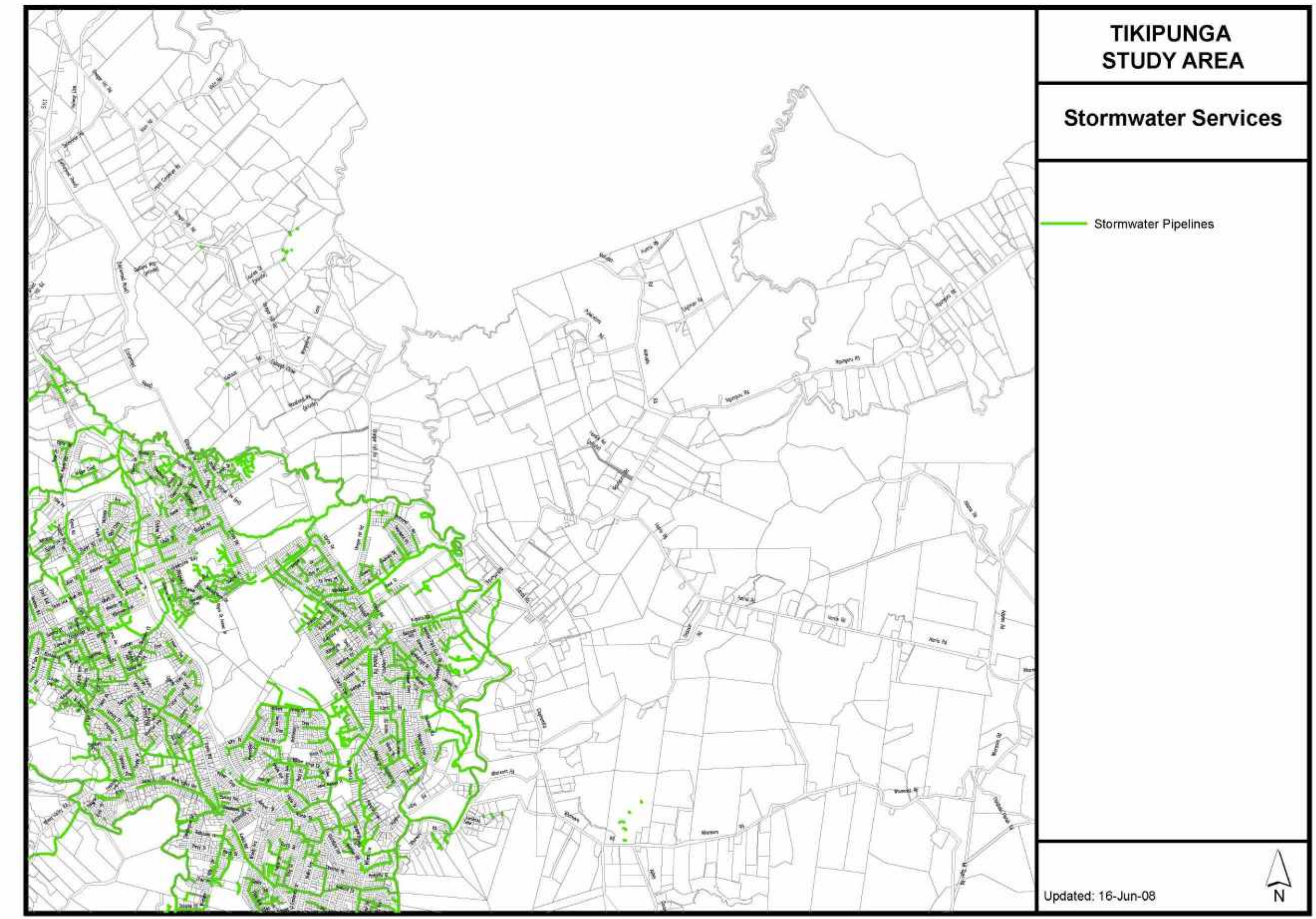


Figure 12 Electricity and Gas Networks

3.4 Transportation

As land subdivision have taken place, particularly along the main ridges like Vinegar Hill Road, as well as along the main roads like Ngunguru, Harris and Whareora Roads, the road network has provided a framework for the tenure pattern.

a Roading

There are no state highways in the study area itself but State Highway 1 is a major access way to the area, and will be affected by development.

Arterial roads in this study area are Kiripaka Road and Ngunguru Road. Collector roads are Corks Road, Whareora Road, Vinegar Hill Road, Station Road and Paramount Parade. Other roads in the study area are local roads, although some paper roads (unformed legal roads) are present, as well as indicative roads which show where roads could be built, depending on the development of the area.

Capital works and maintenance programmes (including seal extensions, realignments, widening, rehabilitation of pavements and the construction of cycle and footpaths) are to be undertaken on an ongoing basis.

b Public Transport

The Whangarei City bus system includes regular services to the city, Whangarei Hospital and suburbs including Raumanga, Morningside, Tikipunga, Kensington, Kamo and Onerahi.

In Tikipunga, the bus navigates the following streets: Kiripaka Road, Heretaunga Street, Boundary Road, Manapouri Street and the northern half of Paramount Parade. Buses operate every half hour in the morning and evening peak hours.

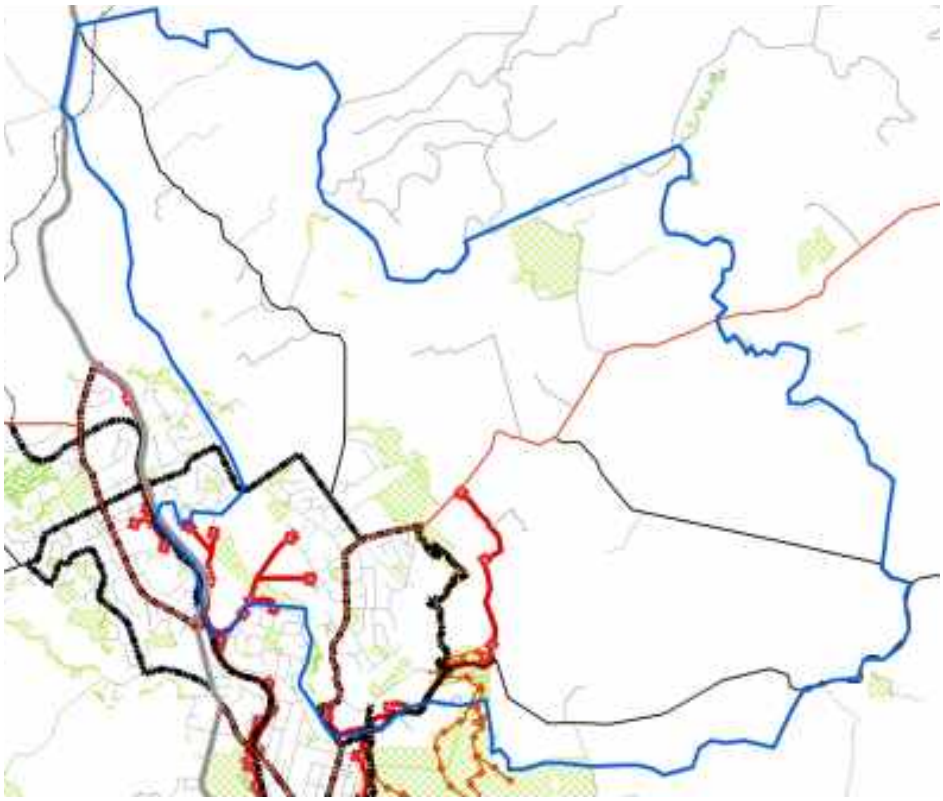
c Cycleways

Council has a Whangarei District Walking and Cycling Strategy that aims to implement and connect pedestrian and cycle networks and facilities that are safe and encourage physical activity and recreation for all residents. This strategy also identifies safer routes to and from schools, and seeks to reduce dependence on motor vehicles.

Proposed routes are shown in the figure below. In red are samples of proposed cycle/walkways, while the blue line indicates the boundary of this Structure Plan area. The main route runs from the northern end of the current cycleway along Kiripaka Rd, along Corks Rd to the intersection with Vinegar Hill Rd, along Spedding Rd and across the golf course to Kamo Rd, then along the golf course to Corks Rd and onto Station Rd. There is also a proposed cycleway alongside the railway line, from Station Rd all the way into Whangarei City.

Given the scarcity of safe bicycle and walking paths, additions such as these should be considered and incorporated into any further development in this study area.

Figure 13 Proposed cycle and walking paths in this study area



d Rail Line

The country's main North/South railway line runs adjacent to the western boundary of the study area. The railway network does not operate passenger services; rather it carries freight such as logs, wood chips and milk products. However, the line does offer the potential for passenger service at some time in the future.

3.5 Current Land Use and Zoning

The land use pattern of the study area is influenced by the topography, soil conditions, climate and proximity to Whangarei City and historical elements, and is characterised by:

- Residential development around Kiripaka Road, the beginning of Whareroa Road, and ribbon development along Corks Road
- Rural Residential development along Whareora Road, Ngunguru Road and Vinegar Hill Road
- Commercial development at Paramount Parade and Kiripaka Road roundabout, with other individual shops such as service stations and dairies.

There is no Industrial zoned land in the area, although some light industrial type businesses appear to be operating in the area, e.g. concrete contractors.

3.5.1 Countryside Environment

This environment covers a large part of the study area, from the very northern tip of the study area and continuing on further north on either side of State Highway 1 to include a large part of Vinegar Hill and Glenbervie. Owing to the traditional agriculture, horticulture and forestry land use, this zoning applies to the rural areas of the study area where the minimum lot size is 4 hectares.

Very productive soils (LUC II) are the reason this area, particularly in Glenbervie, was originally designated Countryside Environment, as it lends itself well to the productivity that has predominantly taken place over the years, that is, the agriculture, horticulture and viticulture industries, which are all relatively clean systems.

Since that time, the haphazard appearance of scattered lifestyle blocks has begun to segment the otherwise larger, productive, rural parcels of Glenbervie and Vinegar Hill. The original intention of the subdivision of

Rural Countryside into lifestyle blocks was to sustain rural areas as smaller-scale farming and horticultural ventures.

Located within land zoned Countryside is Dicksons Quarry, situated to the south of the study area and south east of the urban built environment. This quarry has resource area notation in the District Plan as a Mineral Extraction Area. Reverse sensitivity issues are considered relevant around this industry.

3.5.2 Residential Environments

There are currently two different residential environments in the study area. These are:

Living 1 Environment – general urban areas, with a minimum lot size of 500m^2, which are connected to reticulated sewerage

Living 3 Environment – larger lot residential areas where development is restricted due to the physical nature of the land, a lack of infrastructure or because of landscape or other values of the area. Minimum lot sizes are 2000m^2. This zoning occurs along parts of Whareora Road and Paranui Valley Road, down one side of Boundary Road, and in an area of Balmoral Road.

It is to be noted that large areas zoned for residential development are still vacant. The pattern of development is reflected in the pattern of land tenure, where small lots cluster along the road corridors, with larger blocks (1 - 4 ha) elsewhere.

3.5.3 Business

There are currently three business area zones in the study area:

- Business 2 Environment – business areas that fringe the central business district include light industrial areas with a minimum lot size of 300m^2 and a limitation of 300m^2 for retail and offices.
- Business 3 Environment – shopping and personal services, having a minimum lot size of 100 m^2
- Business 4 Environment – heavy industry with a minimum lot size of 1000 m^2.

There is a small Business 2 area on the east side of State Highway 1, south of Station Road, and another in a triangle bounded by Saleyards Road and the railroad.

Business 3 retail centres include a medium-sized complex at Paramount Parade (which includes the Countdown supermarket) and a smaller group of shops at the Kiripaka Road roundabout. These two sets of shops are relatively close to Whangarei City, and serve as suburban nodes that complement the city. There is also a service station and a dairy in the study area.

There is a large Business 4 area at Kauri, the northern tip of the study area, which includes a timber operation and a large dairy.

3.5.4 Social, Community and Iwi Facilities

There are four schools in the study area: Tikipunga Primary, Totara Grove Primary, Glenbervie Primary and Tikipunga High School which incorporates the intermediate levels. Forest View Kindergarten, Totara Grove Playcentre and Manaakitia Kohanga Reo are also situated in the study area, and adult education programmes are run through the high school.

There is a community centre and a community library in Tikipunga, along with a number of sports clubs. Two medical centres are situated in the area, one on Paramount Parade and the other on Kiripaka Road. A hospice and a community adult day care centre are also present.

There are no emergency medical services based in Tikipunga, although Kamo does have both a fire station and a police station.

Pehiawiri Marae is the centre for Maori activity in the area.

3.5.5 Open Space, Recreation and Natural Amenity Considerations

The study area of Tikipunga, Glenbervie and Vinegar Hill contains quite a number of Open Space Environments, whether they are large areas of land or small neighbourhood parks dotted among the residential areas. Land owned by Council, the Department of Conservation or other organizations, esplanade reserve areas and other reserves that serve recreational and scenic purposes, are all included in the definition of Open Space Environment. Some privately owned, but currently undeveloped, land can also be included. One area currently zoned Living 1 in the District Plan, to the west of Vinegar Hill Road, has since

been designated by the District Council's Parks department as recreation/open space, and will be zoned accordingly.

Some of the major streams within the study area have been identified as Esplanade Priority Areas, including the Hatea River, Paranui and Otangarei Streams. These areas are recognised in the District Plan as being of outstanding recreational and high ecological value and, therefore, a priority for protection by Council.

The Tikipunga Sports Park on Reed Street provides for club activities such as cricket, rugby, soccer, touch rugby and five-aside soccer. The Whangarei Golf Club also has open space characteristics and serves a recreation need, but this facility is a private commercial business of which the underlying zoning is Living 1.

The Glenbervie area falls within the 'Heritage Landscape' category and is described as Unit T7. It is ranked as having a sensitivity of 5 (Significant) in the assessment document. Development within and around Heritage Character Areas, particularly Glenbervie, can only be allowed if proposals demonstrate a high sensitivity towards the character of the area, so that the predominant characteristics of the landscape and its amenity values are maintained or enhanced (5.3.1 of the District Plan, Amenity Values) - although it is preferred if development were to be avoided.

There is a need to encourage and facilitate greater use of public land and parks for walking and other health-related activities. Preferably, this would be achieved by creating and linking pathways in and between these parks, providing residents with sufficient trails, cycleways and walkways for their various needs. There are a number of scenic walks and reserves in the area, including the A.H. Reed Reserve and Whangarei Falls, but more linkages are needed.

Council recognises the need for restrictions on urban and rural residential development in sensitive ecological, geological and landscape areas in this study area. It therefore stresses the importance of the protection of the natural and physical features in this area, and urges development proposals to demonstrate sensitivity to these features as part of their design.

3.5.6 Quarry concerns

The District Plan recognises that the effects of quarrying activities may not always be contained within the boundaries of the property on which it occurs. For this reason, Mineral Extraction Areas are indicated in the Plan, outlining the area within which built development should not occur.

In this study area, Dickson's Quarry is a prominent feature located off Dickson's Road, to the south east of the study area. Located within elevated land at the centre of the character area, the quarry is surrounded by bush on its south-western, southern and, to a lesser extent, eastern sides. Expansion of this quarry will, over the next few years, result in the removal of a portion of the surrounding native bush. Overall, the character area has a moderate level of visual quality with a moderate ability to absorb future development where landform and vegetation allow.

3.6 Community Resources

In view of the LTCCP and feedback from the community, Council acknowledges the importance of the liveability of a community for its safety, health and education, and providing for a network of pedestrian and cycle links throughout the study area to attractions such as the Whangarei Falls, parks and surrounding suburbs, including the city centre.

With this in mind, the opportunity to develop the Tikipunga urban area as a distinct commercial hub becomes more evident. Defining existing commercial areas, as well as re-zoning new commercial land and possibly higher density residential areas, could provide for necessary allowances. In this case, consideration should be given to multi-functional facilities for quality recreation, leisure and cultural events.

Land required for specific public works, such as schools, police stations, new medical/health-related organizations, possible recreational areas and further utilities are identified as designations. All designations in the study area are listed in Appendix 3.

3.7 Significant and Outstanding Landscape Features

In some places within this study area, off the main ridges, the landform and vegetation create an intimacy and enclosed character that is quite unique and unexpected. Threats to the character of this study area include built development on the volcanic cones and the potential for new development to detract from, or erode, the historic landscape character.

The balance of native vegetation in bush remnants, scattered groups of trees and open pasture, contribute greatly to the amenity and currently makes this area sought after for lifestyle properties.

In this particular study area, the scale of large pastoral land holdings has decreased, particularly along the main ridges, as on Vinegar Hill Road. The Vinegar Hill area falls within the "rolling-to-steep pasture with pockets of scrub/bush/forestry" category, lending itself to a smaller-scale land tenure pattern in which previously open pastoral landscape is broken up by the proximity of dwellings in elevated locations.

Outstanding features of the area include the characteristic dry stone walls that enhance the amenity of a large part of this previously farmed area, particularly in Glenbervie. In response to public consultation on the Urban Growth Strategy (2003), Council realised the significance of the existing stone walls, and has begun a project to raise their profile through the identification, mapping and recording of the network of dry stone walls in the Whangarei District. It is envisaged that this will assist in preserving their cultural and scenic heritage. Glenbervie's stone walls and gates are considered to be some of the finer examples within the Whangarei District.

3.8 Historic Buildings, Trees and Sites

Appendix 1 details the historic buildings and trees located in the study area, as well as some sites of significance to Maori, previously mentioned in the Historical Background section.

3.9 Cultural Heritage

The study area contains a number of heritage items identified for protection in the District Plan. During Iwi consultation, Tangata Whenua expressed their desire to identify more of their waahi tapu and pa sites in the area, for recognition and protection by Council. However, a common understanding is required between Council and Tangata Whenua on the identification and mapping, and the confidentiality of the information, as opposed to official listing in the District Plan.

The local marae (Pehiaweri) has suggested the establishment of a potential events centre for cultural and sporting activities for the local community and visitors. Council's Property and Community Services Department has an on-going programme to evaluate existing services and upgrade them as the need arises.

Figure 14 Tikipunga Area – Current District Plan Environment

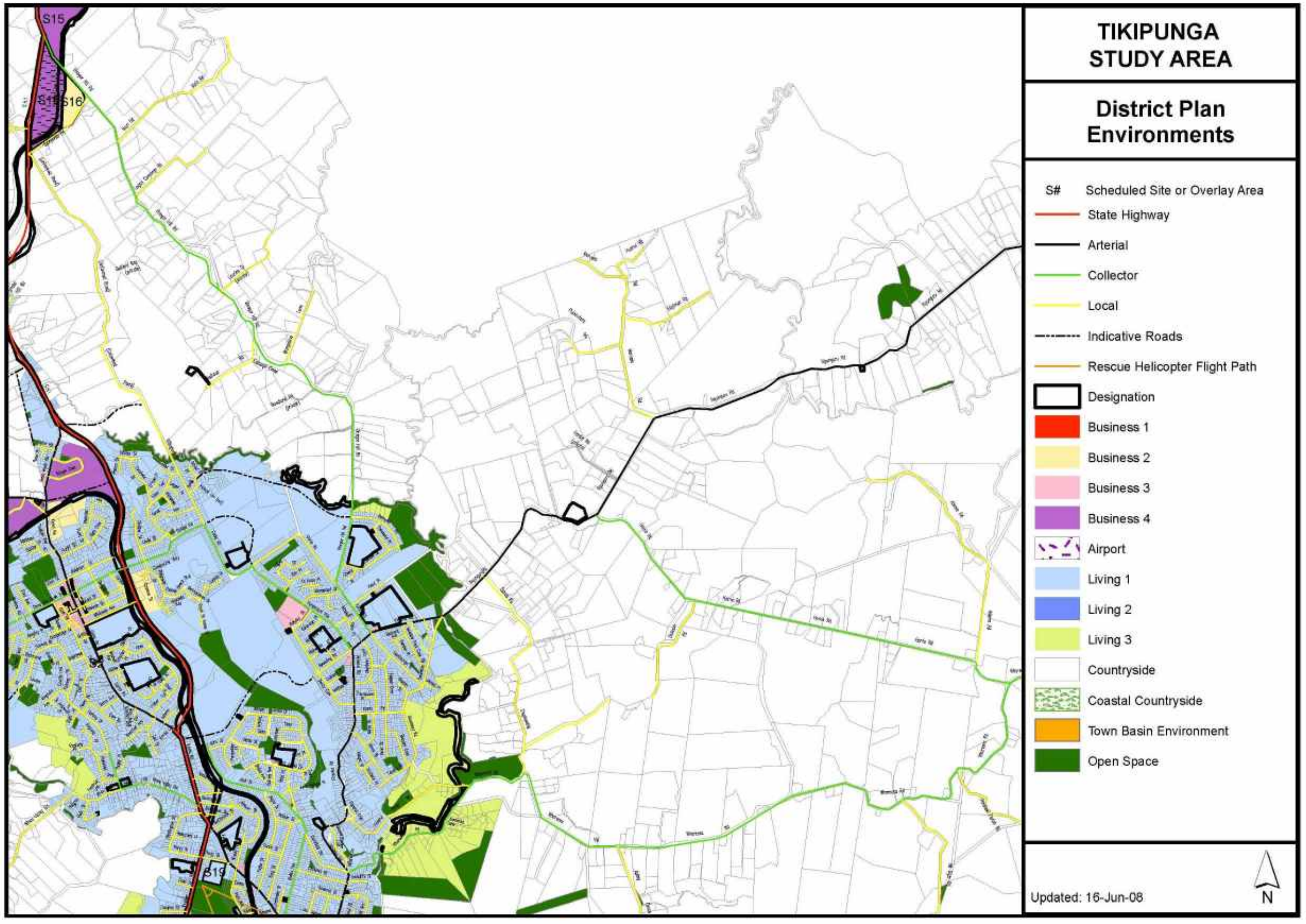
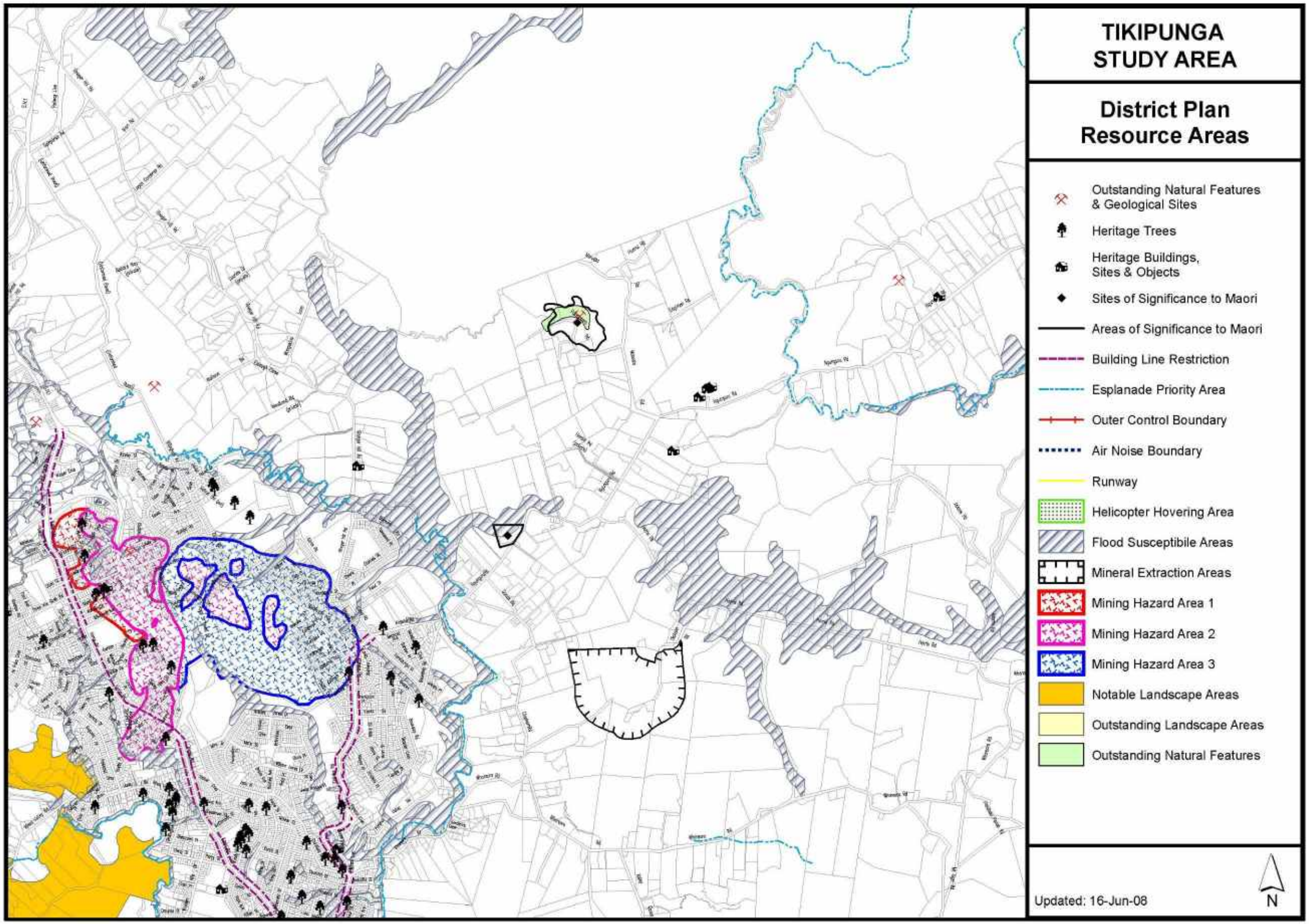


Figure 15 Resource Areas



4 Tikipunga Structure Plan Proposals

4.1 Proposed Roading Network

Properties along State Highway 1 (e.g. through Springs Flat) will not have automatic right to access State Highway 1, and will need permission from the New Zealand Transport Agency to do so. However, this permission is unlikely to be granted unless access is provided via an appropriate roading network, with property access from a network of internal roads, rather than allowing ribbon development along the State Highway. Council may consider leading this process with an indicative roading layout, in consultation with the concerned landowners.

Council will also consider similar issues of access to Vinegar Hill Rd, to discern indicative roading layouts for the whole region, keeping in mind the Resource Management Act and the current District Plan, and in conjunction with the wishes of current landowners.

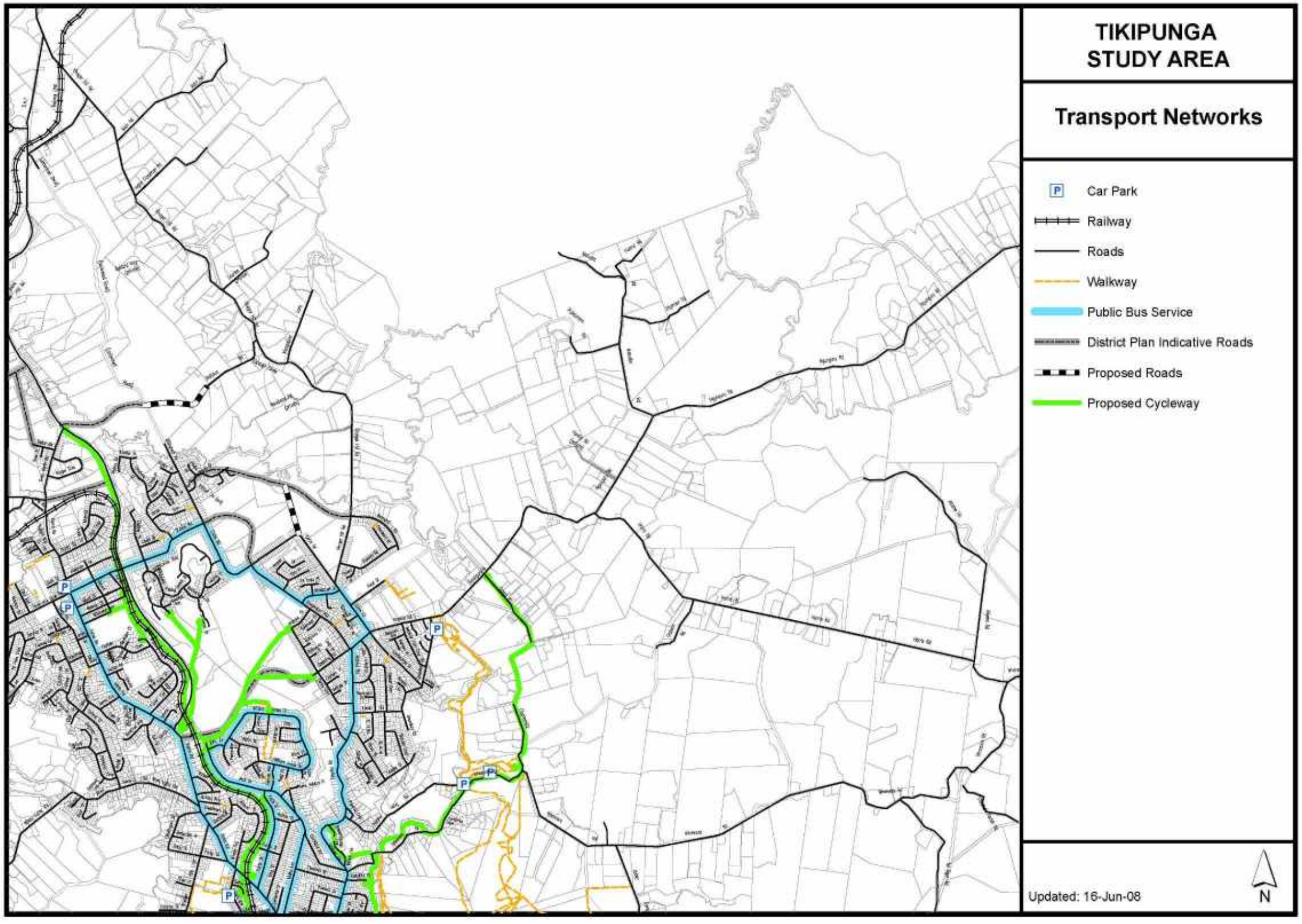
Access from Gillingham North Rd to the state highway presents substantial problems, due to adequate engineering standards for the development of the road. However, this is currently being reviewed by NZTA with a proposal to provide a solution involving Saleyards Road.

It is also proposed to complete the following road connections, as development occurs:

- Alcoba Street, east and west
- Bush Haven Drive to the corner of Vinegar Hill and Balmoral Roads
- paper road from the corner of Corks Road
- extension of Station Road to the corner of Corks Road and Paramount Parade.
- extend Gillingham Road north across the stream and connect to the State Highway 1 intersection at Kamo Road.
- proposed Spedding Road link to the Kamo bypass (as seen in the figures below), along with roundabouts and signal options, as deemed necessary. Look into the Spedding / Denby intersection.

Figure 16 Council Proposals to link Spedding Road with the Kamo Bypass

Figure 17 Transport Networks



4.2 Land Use Proposals

Council's objective is to provide a progression of living environments, beginning with high density urban areas convenient to commercial areas, then leading to medium-density urban areas and on to low-density residential zoning on fringes of urban area, whilst also defining and protecting remaining productive Countryside zoning beyond the residential areas. A well-planned, sustainable structure plan results in better and more sustainable built environments for the whole District. It promotes the sustainable and efficient use of infrastructure, public transport, community facilities and the existing buildings and physical resources of the business centre. It provides for a better choice of available housing, and encourages more vibrant towns and suburban centres, making for a safer environment by enabling both day and night activity that maximises the Tikipunga suburb as a place to live, work and play.

The land use proposals are long term and the result of detailed planning analysis and take into consideration the aspirations of the community, the capacity of the land to accommodate new development and physical constraints for development.

It is important to note that these proposals depend on eventual incorporation into statutory planning documents such as the District Plan and the LTCCP. It is also important to note that further feasibility studies maybe required at the time of implementation of some of the proposals.

Land identified for particular use in this Structure Plan is subject to legal processes of negotiated agreements, acquisition or designation. Council will follow due process in making sure that all necessary procedures are followed before any proposed land use changes are implemented.

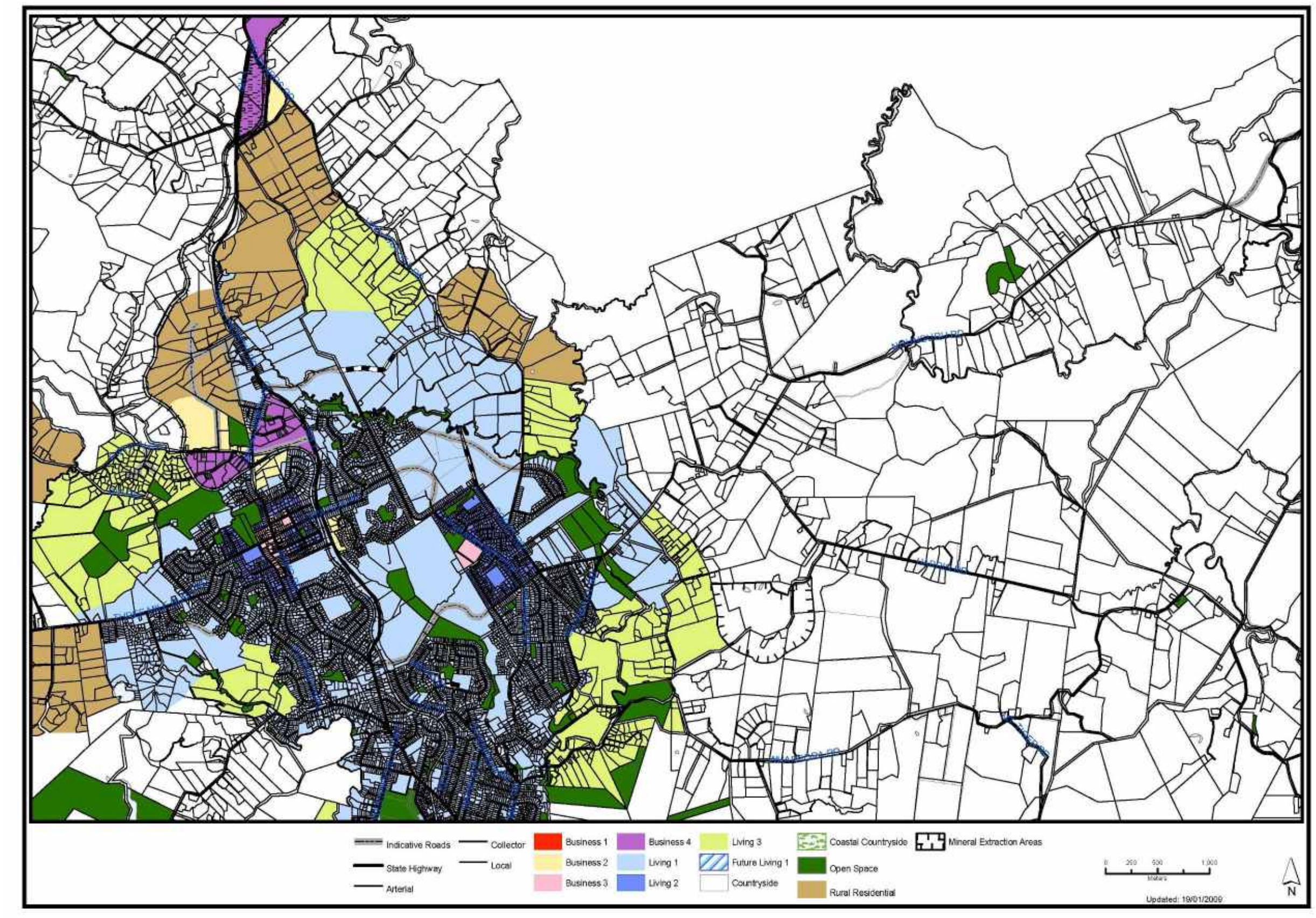
The following land use proposals are referenced in Figure 17 Land Use Proposals. In general, the boundaries of the newly proposed Environments have been drawn to best follow lines that reflect existing landscape patterns, serviced areas or other easily-discernable boundaries, but they also take into account the Urban Growth Strategy and the preference for linear development along State Highway 1, State Highway 14 and the railway line. The boundary of the northern corridor is therefore defined by Vinegar Hill Road and the railway line.

The location of the boundary between Living 1 and Living 3 is mainly influenced by the change in soil structure, having implications for instability, vegetation and topography, as well as following the natural contour that connects roads and parcel boundaries.

The statistical data of the WDC Growth Model (adopted Feb. 2008) shows there are currently a number of large lots in Tikipunga that are zoned for a higher density, but are, as yet, not developed. One such area, in close proximity to the nearby residential and commercial development and with a high ability to absorb change, is the Denby Golf Course. This land is currently zoned as Living 1 and with its prime location and attractive adornment of scattered bush and groups of trees, this area is optimal for a higher density of residential development into and surrounding the retail centre of Tikipunga.

In view of the LTCCP and community wishes, all new zoning in Whangarei should ensure that development is in harmony with the natural environment and promotes awareness of environmental uniqueness. If properly planned, Tikipunga, Glenbervie and Vinegar Hill offer an opportunity to integrate planning and development with appropriate environmental, agricultural and preservation objectives and initiatives. Additional development in this area should be achieved without compromising landscape character or productive soils.

Figure 18 Proposed Environment for Tikipunga



4.2.1 Introduction of Living 2 Environment between the golf course and Corks Road

a District Plan Environment

This area is located to the east of the golf course and extends to Corks Road in the north and the east, and Spedding and Kiripaka Roads in the south, surrounding the Tikipunga shopping centre. The area comprises a total of 42 hectares.

It is proposed to re-zone the current Living 1 Environment to a Living 2 Environment, thereby creating a main centre for the Tikipunga area with higher density housing opportunities clustered around the existing shopping centre.

b Transportation

The area is well serviced by a network of roads that provides good flow in a north to south direction. However, access to State Highway 1 is hampered as there is no east to west connection. An indicative road is proposed to connect Spedding Road with State Highway 1 in order to provide a more direct route to the state highway.

A regular public bus service provides transport to Kamo and the Whangarei central business district (CBD) with buses running every half hour at peak hours.

Two proposed cycleways will also connect this area with Kamo and the Whangarei CBD. The cycleways will start at the western ends of Wanaka Street and Spedding Road, and will run in a south-westerly direction, joining up with the existing railway line along which a cyclepath is proposed.

c Community Resources

Future residents of the proposed Living 2 zone will be in close proximity to a number of community resources such as a medical centre, library, primary school, golf course and a sports park/recreation reserve. Several places of worship can also be found in the vicinity.

d Significant Landscape Features

There are several Protected Natural Areas to the west of the proposed zone, in particular on the golf course. It is recommended that proposals for built development be mindful of, and sympathetic to, these areas.

Resource Areas

The area proposed as Living 2 Environment is identified on Council's resource maps as being in a Mining Hazard Area. Any development proposal in line with a Living 2 density will need to be accompanied by a geotechnical report clearly identifying the location and extent of the mining hazard.

e Flood susceptibility

According to Campbell Consulting Ltd's study, the stream running to the north of the proposed zone is a potential flood area, as well as a couple of small areas on the western side, just west and south-west of Reed Street. Due to the proposed higher density zoning, stormwater management will become of particular importance in these flood zones. It is recommended that appropriate engineering advice is obtained for development proposals, and that stormwater and minimum floor levels are designed accordingly.

f Geology, Slope and Slope (in)stability

The Kerikeri Volcanic Group is the geological formation that covers the vast majority of this area. In general, the volcanic rocks have moderate-to-good effluent disposal potential. In the north-western corner of the proposed zone, the geological formation consists of Northland Allochthon, which typically has very low effluent disposal potential, while also tending to have unstable ground.

However, as the area is serviced with Council reticulated systems, the impact of effluent disposal will not be an issue in this proposed zone.

The slopes in the area are classified as flat-to–undulating, generally having a low risk for slope instability. However, site-specific geotechnical reports may still be required, especially for projects to be located on the potentially unstable ground of the Northland Allochthon formations.

g Threatened Environments

The proposed Living 2 zone is located in an area where only 10% to 20% of indigenous biodiversity remains. This threat to biodiversity holds true for the majority of the Tikipunga area, indicating that indigenous biodiversity, and thereby habitats for native species, are in severe danger of being lost.

The proposal to accommodate higher density living opportunities is not conducive to the retention or enhancement of indigenous biodiversity. It is therefore imperative that active protection measures are implemented in other parts of the study area in order to ensure the survival and diversity of indigenous species.

In particular, the Rural and Rural-Residential Environments should be earmarked for active environmental protection, as well as the Living 3 Environments, wherever possible. Well-designed developments can be of great assistance in the pursuit of this goal.

h Water, Stormwater and Wastewater Services

The area enjoys full Council reticulated water, wastewater and stormwater services. Any new development that should occur as a result of this proposed re-zoning should be able to connect to the existing services.

i Recommendation

The proposal meets the infill and transition criteria for land development. The landform is mainly flat and development can take advantage of existing infrastructure. The proposal will create the opportunity for a mix of housing possibilities with increased residential capacity likely to bring about positive gains for a better sustained commercial centre. The presence of a range of community services, shops, public transport to and from Kamo and the Whangarei CBD and a good roading network within the proposed zone, make the area ideal for the proposed Living 2 zone.

It is important not to lose sight of the necessity to undertake geotechnical investigations in order to address the potential instability and mining hazards referred to above.

4.2.2 Extension of Living 1 Environment to the east of the existing village centre, along Ngunguru Road and Sands Road

a District Plan Environment

This proposed zone is located to the east of the existing village centre, with the Hatea Stream serving as its eastern boundary. It stretches both north and south of Ngunguru Road. The south-eastern boundary is marked by Sands Road while the northern tip of the area is located where the Hatea Stream meets Lot 3 DP 176598. The total area comprises around 74 hectares.

The area is currently zoned Countryside with an existing Living 1 Environment located to the west. There are also proposed changes for the areas to the south and north-west to be zoned Living 3. The area to the east will remain Countryside Environment.

b Transportation

There are a limited number of public roads serving this proposed zone, with the area north of Ngunguru Road being least accessible. Any new development will need to ensure adequate access is available to all properties.

Currently, the public bus route extends to Boundary Road, which is less than one kilometre from the newly proposed zone. With buses running at half hour intervals during peak times, it is deemed that this service is adequate for the foreseeable future.

A cycleway is proposed to extend to the Whangarei CBD, starting at the crossing of Ngunguru Road and Sands Road, heading south along Sands Road, Clapham Road and continuing along Whareora Road, turning south again along the stream just before Mill Road.

c Community Resources

The proposed area is on the boundary of a number of parks and recreation reserves, and is within walking distance to Glenbervie Primary School and Tikipunga High School. There are several places of worship in the vicinity, as well as the community hall.

The library, medical centre, golf course and main shopping centre are a little further away, at approximately 2.5 kilometres.

d Significant Landscape Features

A number of Protected Natural Areas can be found along the boundary of the proposed zone, in particular, along the north and north-eastern boundary, the centre of the eastern boundary and along the south-eastern side. This area along the south-eastern boundary has also been classified as an 'Outstanding Landscape' area, containing the Whangarei Falls. The western boundary, marked by the Waitaua Stream, is identified as an esplanade priority area in the District Plan.

It is recommended that any development in this proposed zone is sympathetic to these areas, presenting a design that incorporates the advice of an appropriately qualified ecologist. The protection of riparian margins is encouraged on account of the esplanade priority area.

e Flood susceptibility

Council records identify the majority of this proposed zone as being susceptible to flooding due to its close proximity to the Waitaua Stream and other water courses. For this reason, stormwater management will require particular attention in any development proposal. Minimum floor levels for dwellings will also require expert design.

f Geology, Slope and Slope (in)stability

The geological formation in the northern part of the proposed zone consists of alluvial, swamp and estuarine deposits, while the southern part consists of Puhipuhi-Whangarei Volcanic Field, a formation of the Kerikeri Volcanic Group. In general, alluvial, swamp or estuarine deposits provide for low effluent disposal potential, whereas formations of the Kerikeri Volcanic Group generally have good-to-moderate effluent disposal potential. Site-specific engineering reports will be required for most proposals on the alluvial, swamp and estuarine deposits.

The whole of the area is characterized by flat-to-gently undulating land carrying low risk of instability.

g Threatened Environments

The proposed Living 1 zone is located in an area where only 10% to 20% of indigenous cover remains nationally. Wherever possible, development will be required to be mindful of the natural environment and be designed in accordance with expert ecological reports.

h Land Use Capability

The soils in the proposed zone are reasonably versatile, suitable for cultivated crops, pasture or forestry. Development of a Living 1 type density on this land means that the productive capacity of these soils will be lost. This trade-off is considered to be appropriate in view of the urban growth consolidation exercise undertaken as part of the structure plan process. It is important to ensure that versatile soils elsewhere in the study area, and in the wider District, are preserved.

i Water, Stormwater and Wastewater Services

Council reticulated water, stormwater and wastewater pipelines run along Ngunguru Road up to the boundary of the proposed zone. A further extension of these services into the zone will be required for the intended Living 1 development.

j Recommendation

The proposed zone meets the contiguous criterion for land development and is situated on land with a gentle topography. While comprehensive water, wastewater and stormwater infrastructure is not present at the moment, these services only need to be extended from the existing pipelines along Ngunguru Road.

New development may need to provide for some further roading infrastructure, but public transport is considered to be adequate, as are the existing community resources.

Of importance is the consideration and protection of the natural environment, wherever possible, while also considering engineering solutions to address the flooding potential.

4.2.3 Extension of Living 1 Environment to the north between Vinegar Hill Road and State Highway 1

a District Plan Environment

This proposed zone is located between Vinegar Hill Road in the east and State Highway 1 in the west. It comprises a total of 220 hectares and extends the current Living 1 Environment northwards to just north of Waitaua Road on the eastern side, and approximately 700 metres north of the indicative road which is to join Waitaua Road with State Highway 1.

The area is currently zoned Countryside with a Living 1 Environment to the south. Changes are also proposed for the area north of this proposed zone, with the proposed creation of another Living 3 Environment and the introduction of two Rural-Residential Environments.

b Transportation

The proposed zone borders State Highway 1 to the west, and is served by Vinegar Hill Road, which is a collector road. A number of indicative and proposed roads are shown on the structure plan map, illustrating where roads could be built. Further roading infrastructure will need to be provided, depending on the development that occurs.

No public transport is available to the area, at the moment. A cycle way is proposed to run south along State Highway 1, and continue along the railway line. This will provide access to Kamo and Whangarei CBD.

c Community Resources

Community resources in the immediate vicinity of the proposed zone are limited to the Kamo Christian College and a park/recreation reserve. However, both Kamo and Tikipunga village centres have a range of community facilities, and are at approximately equal distance from the proposed zones

d Significant Landscape Features

There are a large number of recorded Protected Natural Areas within, and to the north and south of the proposed zone. It is recommended that any development be sympathetic to these natural areas based on recommendations sought from appropriate ecological expertise, and be designed accordingly.

e Flood susceptibility

Council records show no major flood susceptible areas within the proposed zone, although some minor flooding may occur along some of the streams. Site-specific engineering reports may be required in some instances.

f Geology, Slope and Slope (in)stability

The proposed Living 1 zone stretches over three different geological formations: the Kerikeri Volcanic Group, the Whangai Formation and the Northland Allochthon. Effluent disposal potential in the different formations ranges from moderate-to-good to very low effluent disposal potential, although this consideration is not of particular importance as a Living 1 Environment is a serviced environment.

Slope angles range from flat-to-gently undulating to strongly rolling, with a small area considered to have a rolling topography. Risk of slope instability is generally considered low, with some areas classified as moderate risk, while a small area toward the centre of the proposed zone carries a high risk of slope instability. Site-specific engineering reports will be required for development in certain areas.

g Threatened Environments

About 50 per cent of the proposed zone is considered to be reasonably protected and at reduced risk of losing biodiversity, whereas the other half, in the south of the proposed zone, is considered to be chronically threatened with only 10% to 20% of indigenous cover remaining. It is recommended, therefore, that development be designed in sympathy with the natural environment and in accordance with expert ecological advice.

h Land Use Capability

The majority of the proposed zone consists of soils classified as Category IV, with some smaller areas classified as Categories III and VI. In general, these soils have a reasonable cropping capacity, but are not considered to be the finest.

Development of a Living 1 type density is not conducive to the retention of productive soils. However, a trade-off is considered to be acceptable in view of the urban growth consolidation exercise undertaken as part of the structure plan process.

i Waters Stormwater and Wastewater Services

Water, stormwater and wastewater services are available along State Highway 1. However, pipelines are limited within the proposed zone. When significant expansion occurs, water reticulation, in particular, will be required to be upgraded.

j Recommendation

The proposed zone meets the contiguous and transition criteria for land development, although significant infrastructure such as roading and reticulated services are limited at this moment in time. Some Council resources have been committed, but it is envisaged that new development will contribute towards newly required infrastructure.

This proposal does not encounter any major constraints, although site-specific engineering reports are recommended for flood susceptible areas and areas with instability risk. Ecological expertise should be sought in order to design developments that are sympathetic to the natural surrounding environment.

4.2.4 Changing Living 3 to Living 1 north of Balmoral Road

a District Plan Environment

The area comprises approximately 2 hectares and is located just north of Balmoral Road. It is currently zoned Living 3, and is proposed to change to a Living 1 Environment.

The Environments to the south and west are also Living 1, while the area to the north is currently Countryside, but proposed Living 3.

b Transportation

The proposed zone has easy access to the existing roading infrastructure and is less than 1 kilometre away from the public bus route. Future residents should also be able to make use of the proposed cycleways.

c Community Resources

A range of community resources, such as primary school, high school, library, medical centre, park/recreation reserve, places of worship and shopping centre, can all be found within a 1 kilometre radius.

d Significant Landscape Features

A small Protected Natural Area exists just to the north of the proposed zone. This area forms part of a larger District Council reserve area incorporating part of the Waitaua Stream which runs just north of the proposed zone. It is considered that the proposed change from a Living 3 to a Living 1 Environment will not have any adverse impacts upon this area as long as appropriate stormwater management techniques are implemented.

e Flood susceptibility

Council records show this area to be prone to floods, mainly due to its proximity to a network of streams. It is advisable that any built development carefully consider the stormwater management for the area, as well as minimum floor levels. It is recommended that an appropriately qualified engineer is engaged.

f Geology, Slope and Slope (in)stability

The geological formation for this area consists of alluvial, swamp or estuarine deposits. Generally, potential for effluent disposal is not considered to be good. Changing the zone from a Living 3 Environment to a Living 1 Environment will ensure that development will be connected to reticulated services.

Slope angles are identified as flat-to-gently undulating, with low risk of instability.

g Threatened Environments

The proposed zone is located in an area classified as chronically threatened. It is recommended that development proposals be aware of the ecology of the area, and be designed accordingly.

h Land Use Capability

The soils in this area are reasonably versatile and could, technically, be quite productive. However, given the existing zoning as Living 3, and the proposed land uses of the surrounding areas, the proposed Living 1 Environment is considered to be more appropriate in this instance.

i Water, Stormwater and Wastewater Services

Reticulated water, stormwater and wastewater services are available along Balmoral Road. Any built development will be able to connect to these services, although care will need to be taken in regard to the possible impact of stormwater run-off on flooding potential.

j Recommendation

The proposal meets the 'contiguous' and 'infill' criteria for land development. Reticulated services are available in the vicinity, enabling new developments to be connected. Appropriate roading infrastructure is in place, and easy access is available to public transport and community resources.

As the area is flood-prone, engineering advice will be required in terms of stormwater management and minimum floor levels for built development.

4.2.5 Extension of Living 3 to the East of the current Living 3 Environment

a District Plan Environment

This proposed zone is situated to the east of the current Living 3 Environment and extends to the western boundary of the designated mineral extraction area, also known as 'Dickson's Quarry'. The northern boundary is formed by Ngunguru Road, while the southern boundary is formed by a paper road. Part of the south-eastern boundary is formed by Whareora Road.

The total area comprises 89 hectares.

b Transportation

The area is serviced by a substantial roading network, providing good access to the Tikipunga village centre and Whangarei CBD.

Public transport is available along Kiripaka Road, Boundary Road and Heretaunga Road. These roads are reasonably accessible due to a walkway along the Waitaua Stream, which runs through the proposed zone.

A cycleway is proposed along Sands Road, connecting to Clapham Road, and heading south, south-west along Whareora Road.

c Community Resources

Sports parks and recreation reserves will be within easy reach of future residents. They will also have access to a Department of Conservation area which is located to the south of Whareora Road, opposite, but contiguous to, the Whangarei District Council reserve.

Depending upon where residents will be located within the proposed zone, some community resources will be within reasonable walking distance, whereas others may be a little further removed.

The majority of community resources will be within easy reach of any motorised transport.

d Significant Landscape Features

The western boundary of the proposed zone is part of an area identified in Council records as an 'outstanding landscape'. The Waitaua Stream, which forms the western boundary of the proposed zone, is also specified as an esplanade priority area. It is recommended that development proposals be mindful of these specifications and that any design be in accordance with appropriate ecological advice. The most northern part of this proposed zone is dissected by a section of a long stone wall which travels in a south-

west to north-east direction. Heritage stone walls enjoy protection under the current District Plan rules. Any development proposals will need to take heed of these rules.

e Flood susceptibility

No areas within the proposed zone have been identified as susceptible to flood. However, flood susceptibility is recorded in the area to the west of the western boundary. It is recommended that stormwater management is subject to appropriate engineering advice.

f Geology, Slope and Slope (in)stability

The overarching geological formation for the proposed zone is identified as the Kerikeri Volcanic Group. Effluent disposal potential is generally good-to-moderate in soils of this formation. The eastern side of the proposed zone is characterized by a formation known as the Waipapa Terrane, in which effluent disposal potential is generally moderate-to-poor. The western side and south-eastern tip of the proposed area contain alluvial, swamp or estuarine deposits. In general, effluent disposal potential is very low. However, it can be reasonably good depending on the actual composition of the geology. As the western area adjoins a stream, site-specific engineering reports will be required, in terms of the design of effluent treatment and disposal systems, in order to prevent leaching.

The terrain of the proposed zone is especially varied having areas of flat-to-undulating land, rolling landscape and with some parts identified as strongly rolling.

Slope instability also varies, with the majority of the land having low risk, while small areas to the east carry moderate risk of instability, and land along the western boundary being identified as carrying high risk.

g Threatened Environments

A number of different categories of threatened biodiversity can be found within the proposed zone. These range from areas in which only 0% to 10% of indigenous cover remains, to areas with 10% to 20% remaining indigenous cover, and then to areas where more than 30% of indigenous cover remains, but the biodiversity has little legal protection. There is also an area where biodiversity is better protected and less reduced.

h Land Use Capability

A range of reasonably versatile soils can be found within the proposed zone. The productive capacity of these soils will be removed with the development of a Living 3 Environment. However, a large area of similarly-productive soils remains as Countryside Environment within the Tikipunga/Glenbervie area.

i Water, Stormwater and Wastewater Services

Reticulated water and wastewater extend to Ngunguru Road. It is possible to extend these services, if it is decided that the Living 3 Environment is to be a serviced environment. Both the water reservoir in Dip Road and the water treatment plant in Whau Valley are approaching capacity. However, in the LTCCP, Council has identified resources to duplicate the Dip Road reservoir and to increase capacity at the Whau Valley treatment plant by 2016.

j Recommendation

The proposal meets the ‘transition’ and ‘contiguous’ criteria for land development as it provides for a gradual transition of densities from urban to countryside, and allows long term consolidation of the urbanised area by allowing densities to increase on the fringes, in the future.

The area is serviced by a well-established roading network that provides easy access to a range of community facilities. Connection to reticulated services will be available to some areas, and is able to be extended in the future.

Given the ecology, the potential presence of dry stone walls and potential for flooding within the area, development proposals are recommended to be designed around professional advice from engineering, ecological and/or landscape experts, depending on the area to be developed within the zone.

4.2.6 Creation of Living 3 Environment East of Vinegar Hill Road and North of the Waitaua Stream

a District Plan Environment

This proposed zone is situated to the east of Vinegar Hill Road, just north of the Waitaua Stream. The eastern boundary is formed by the Mangakino Stream. The total area comprises 35 hectares.

b Transportation

The proposed zone borders Vinegar Hill Road which will be the main road servicing this area. This road is a collector road and largely runs in a north to south direction. An indicative road to the south-west of the proposed zone has been identified by Council. This indicative road runs in an east-west direction.

There is currently no public transport available to this area and Council's proposed cycleways network does not identify any cycle paths in this proposed zone.

c Community Resources

A range of community resources can be found within a 2 kilometre distance from the proposed zone, with facilities such as primary school, high school, library, medical centre and places of worship being available. The proposed zone borders on a park/recreation reserve and has easy access to a shopping centre and golf course.

d Significant Landscape Features

Protected Natural Areas, which include the Mangakino Stream, border on the eastern boundary of the zone. A couple of conservation covenants already exist within these areas. It is recommended that ecological advice is sought in determining the design of any built development so that it is sympathetic to the natural environment.

e Flood susceptibility

Council records indicate that the eastern and southern boundaries of the proposed zone are susceptible to flooding due to the presence of the Mangakino Stream. Any development in potentially affected areas will require appropriate stormwater design and management, while minimum floor levels will also require engineering input.

f Geology, Slope and Slope (in)stability

The geological formation underlying the proposed zone consists of alluvial, swamp or estuarine deposits along the eastern and southern boundaries, whereas the western side consists of the Whangai formation. Alluvial, swamp or estuarine deposits generally have low effluent disposal potential, and site-specific engineering reports will be required, also because the zone adjoins the Mangakino and Waitaua Streams.

The topography in the east and south can be classified as flat-to-gently undulating, with the western area identified as rolling landscape. There is low risk of instability for most of the proposed zone, however, some smaller areas toward the north and north-west being considered to have moderate risk of instability. Site-specific geotechnical reports are recommended as part of development proposals.

g Threatened Environments

The eastern and southern boundaries of the proposed zone are identified as areas where only 10% to 20% of indigenous cover remains, while the rest of the proposed zone is has better cover with potentially more than 30% remaining, but the biodiversity has little legal protection. Any built development should be designed in a way that protects the indigenous biodiversity, wherever possible.

h Land Use Capability

The proposed zone covers an area where soils have been identified as having moderate limitations for arable use. Occasional cropping, pasture and forestry are all possible uses for these soils. However, the population density envisaged by a Living 3 Environment is not conducive to preserving the productive capacity of soils, apart from supporting the occasional vegetable garden.

i Water, Stormwater and Wastewater Services

Reticulated water and wastewater pipelines end just south of the proposed zone. However, a Living 3 Environment is typically non-serviced and development is required to provide on-site provision for water and wastewater disposal.

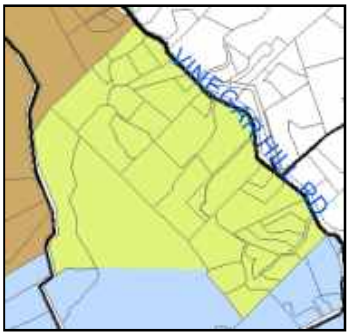
j Recommendation

The proposed zone meets the transition and contiguous criteria for land development while not requiring Council reticulated services. The area borders a collector road which provides easy access to a range of community facilities.

Being on the boundary of a stream that forms part of an ecologically significant area, it is recommended that development be sensitive to the ecology, and that engineering reports be provided to address potential flood susceptibility, particularly in terms of stormwater management and minimum floor levels. In certain areas, geotechnical reports will be required to address instability risks.

4.2.7 Creation of Living 3 Environment West of Vinegar Hill Road and North of the proposed Living 1 Environment

a District Plan Environment



The proposed Living 3 zone comprises about 88 hectares of land to the west of Vinegar Hill Road and east of Jounneaux Road. Its southern boundary is formed by the proposed Living 1 Environment.

Other land uses in the vicinity include a proposed Rural-Residential Environment to the west and north-west, and to the east, a proposed Living 1 Environment to the south, and Countryside Environment to the north and north-east.

b Transportation

Roading infrastructure is limited within and around the proposed zone. Access to and from the zone will essentially be from Vinegar Hill Road and from Jounneaux Road. An indicative and proposed east-west road is intended just south of the proposed area, extending Waitaua Road, and connecting Vinegar Hill Road with State Highway 1.

There are no proposed cycleways in the immediate vicinity of the proposed zone, and no public buses serve the area at this moment in time.

c Community Resources

The majority of community resources are not within easy walking distance from the proposed zone, but are located approximately 4 kilometres away towards the centre of Tikipunga.

d Significant Landscape Features

There are a number of Protected Natural Areas situated within the proposed zone, as well as a large QE II covenanted area and several other conservation covenanted areas.

e Flood susceptibility

Council records show no potential for flooding in the proposed zone.

f Geology, Slope and Slope (in)stability

The geological formation of the proposed zone is known as the Kerikeri Volcanic Group which, in general, has a moderate-to-good effluent disposal potential. The topography in the majority of the area is classified as strongly rolling with generally low-to-moderate risk of slope instability, with the exception of one area just north of the centre, where the risk for slope instability has been assessed as high. Site-specific geotechnical investigations will be required for many development proposals within this zone.

g Threatened Environments

The majority of this proposed zone has been assessed as being better protected with less reduced biodiversity. Continued protection of the natural environment is therefore encouraged.

h Land Use Capability

The soils within the proposed zone are considered to be less versatile, and for this reason, the change in land use from Countryside to Living 3, is considered to have only a minor effect on the productive capacity of the area.

i Water, Stormwater and Wastewater Services

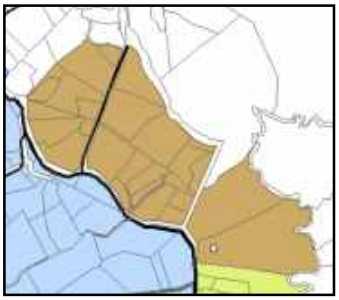
The proposed zone does not benefit from reticulated services. Built development will be required to have on-site provision for water and wastewater disposal.

j Recommendation

The proposed change meets the transition and contiguous criteria for land development as it provides for a more gradual transition of densities from Urban to Countryside, and allows long term consolidation of the urbanised area by allowing densities to increase on the fringes, in the future.

4.2.8 Creation of Rural-Residential Environment East of Vinegar Hill Road and North of the proposed Living 3 Environment

a District Plan Environment



This area is located to the north-east of Vinegar Hill Road and the newly proposed Living 1 zone. The total area comprises 70 hectares, and is bounded by the Mangakino Stream to the east.

This newly-introduced Environment is to act as a transition and buffer zone between the Living 1 Environment to the south/south-west and the Countryside Environment to the east and north.

b Transportation

There are a number of local roads able to service the development potential for this area. The distance to the nearest public transport system is approximately 3 kilometres, and there are no cycleways proposed for the area. A park-'n-ride facility may need to be considered, in the future, in order to make public transport accessible to future residents is this area.

c Community Resources

The majority of community facilities, such as schools, medical centre, library and shopping centre, are not considered to be within walking distance of the proposed zone. However, a distance of approximately 3 kilometres is easily bridged by motorised transport. By its very nature, the Rural-Residential zone is slightly further removed for village centres, in order for residents to enjoy the open space characteristics and feelings of remoteness that are considered to be the attributes of such a zone.

d Significant Landscape Features

The proposed Rural-Residential zone contains a number of Protected Natural Areas. It is also bounded by such an area to the east of the zone, containing part of the Mangakino Stream. The area also contains a number of conservation covenants. It is recommended that any new development be mindful of the surrounding natural environment, and designs be proposed based on professional ecological advice.

e Flood susceptibility

The eastern and north-eastern sides of the proposed zone are recognised as being susceptible to floods due to the presence of a stream network. It is recommended that appropriate engineering advice is sought, particularly in terms of stormwater management and minimum floor levels, as part of any new development proposals.

f Geology, Slope and Slope (in)stability

The geological formation underlying the proposed zone consists of alluvial, swamp or estuarine deposits along the north, north-eastern and eastern boundaries, whereas the western side consists of the Whangai formation. Alluvial, swamp or estuarine deposits generally have low effluent disposal potential, and site-specific engineering reports will be required.

The topography of the area is varied with northern, north-eastern and eastern boundaries being flat-to-gently undulating. The central areas are classified as rolling, while the north-western portion of the zone is strongly rolling.

In terms of stability, the majority of the zone is classified as having low risk of instability, with the area along the western boundary classified as having moderate risk. A small area in the west contains a high risk of instability. Geotechnical engineering reports will be required as part of development proposals in these areas.

g Threatened Environments

The threats to the biodiversity in the proposed Rural-Residential zone are classified under three separate categories. In the west, south-west and southern area, more than 30% of indigenous cover remains, but the biodiversity enjoys little legal protection. In the east and north-eastern area, only 10% to 20% of indigenous cover remains and there has been a great loss of habitats for native species, while the north-western side benefits from better legal protection, and has less reduced biodiversity.

It is recommended that new development be mindful of the surrounding natural environment, particularly in regard to stream edges and riparian margins, and that designs are initiated based on professional ecological advice.

h Land Use Capability

The majority of soils in the area have been classified as reasonably versatile with moderate limitations for arable use, but suitable for cultivated or occasional cropping, pasture or forestry. A small area in the north-west of the proposed zone is identified as non-arable land.

As the Rural-Residential zone is intended to provide living opportunities for those wishing to undertake agricultural activities, as well as those who merely want to enjoy the open space character of the area, it is recommended that, wherever possible, development is designed with the underlying soil structure in mind. For example, market demand for low-maintenance sections within a rural character area are able to be provided on soils not suitable for cropping. Conversely, land with productive soils lends itself to being retained in larger lots so as to maintain economic viability of agricultural activities.

i Water, Stormwater and Wastewater Services

The Rural-Residential zone is intended to be self-reliant and provide for on-site household water and wastewater disposal. Council reticulated services are not envisaged in the near future.

j Recommendation

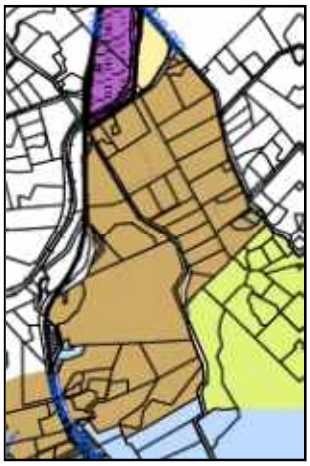
The proposal meets the ‘transition’ and ‘contiguous’ criteria for land development as it provides a buffer zone between the urban form of development and the countryside, while at the same time providing for long term consolidation of the urbanised area.

The area is within a reasonable distance to the village centre of Tikipunga, which provides a range of community facilities. Reticulated services are not required as this zone is to be self-reliant.

Developments are recommended to be sympathetic to the surrounding natural environment, with particular regard to soil versatility, stream edges and riparian margins. In general, these margins have been identified as being flood susceptible, and will require appropriate engineering input if development is to occur.

4.2.9 Creation of Rural-Residential Environment West of Vinegar Hill Road, North of the proposed Living 1 Environment and West of the proposed Living 3 Environment

a District Plan Environment



The proposed area is bounded by State Highway 1 in the west, Vinegar Hill Road in the east and the railway line and a Business 2 Environment in the north. The southern boundary is formed by the newly proposed Living 1 Environment, while a newly proposed Living 3 Environment is located to the south-east.

The total area comprises 146 hectares.

b Transportation

The area is serviced by a number of roads. As mentioned above, the area adjoins a state highway and is bounded by Vinegar Hill Road, which is a collector road. Saleyards Road is a local road to the north of the area and Jounneaux Road is a yet-to-be formed paper road.

No public transport is available in the area, and a park-'n-ride facility may be required in the future in order to make this service accessible. No cycleways are proposed for the area.

c Community Resources

The majority of community facilities, such as schools, medical centre, library and shopping centre, are not considered to be within walking distance of the proposed zone. However, a distance of approximately 5 kilometres is easily bridged by motorised transport. By its very nature, the Rural-Residential zone is slightly further removed for village centres, in order for residents to enjoy the open space characteristics and feelings of remoteness that are considered to be the attributes of such a zone.

This proposed zone has good access to both the Tikipunga and Kamo village centres.

d Significant Landscape Features

The area contains a number of Protected Natural Areas, as well as two large conservation covenants. It is recommended that any new development be mindful of the surrounding natural environment, with designs proposed accordingly.

e Geology, Slope and Slope (in)stability

The vast majority of the geological formation of this proposed zone is known as the Kerikeri Volcanic Group. In general, effluent disposal in this formation tends to be moderate-to-good.

The slopes within the area tend to be steep, with a small area in the centre of the proposed zone categorised as flat-to-gently undulating. Risk of slope instability has generally been assessed as low, with smaller distributed patches identified as having moderate risk. Site-specific geotechnical engineering reports will be required for development proposals in some areas.

f Threatened Environments

Generally, the threat to biodiversity in the proposed zone is less reduced as the area is better protected. However, in smaller areas, particularly in the centre of the proposed zone and in the north and north-east, biodiversity has been identified as being chronically threatened.

It is recommended that development proposals be sympathetic to the surrounding natural environment.

g Land Use Capability

The majority of soils in the area have been classified by Landcare Research (1996) as reasonably versatile with moderate limitations for arable use but suitable for cultivated or occasional cropping, pasture or forestry. A smaller area in the south-west of the proposed zone is identified as non-arable land.

As the Rural-Residential zone is intended to provide living opportunities for those wishing to undertake agricultural activities, as well as those who merely want to enjoy the open space character of the area, it is recommended that, wherever possible, development is designed with the underlying soil structure in mind. For example, market demand for low-maintenance sections within a rural character area are able to be provided on soils not suitable for cropping. Conversely, land with productive soils lends itself to being retained in larger lots so as to maintain economic viability of agricultural activities.

h Water, Stormwater and Wastewater Services

The Rural-Residential zone is intended to be self-reliant and provide for on-site household water and wastewater disposal. Council reticulated services are not envisaged in the near future.

i Recommendation

The proposal meets the 'transition' and 'contiguous' criteria for land development as it provides a buffer zone between the urban form of development and the countryside, while at the same time providing for long term consolidation of the urbanised area.

The area is within a reasonable distance to both the village centres of Tikipunga and Kamo, which provide a range of community facilities. Reticulated services are not required as the zone is to be self-reliant.

Developments are urged to be sympathetic to the surrounding natural environment due to the identified Protected Natural Areas and the particular soil versatility. Designs are recommended to be based on professional ecological advice.

There are no apparent flood or instability risks associated with the proposed zone.

4.3 Overall Development Assessment

The proposals discussed above are considered to be more than adequate to provide for the needs of the community, while at the same time maintain productive land. The proposals will accommodate development well beyond the foreseeable future.

Other development proposals that complement those outlined above, such as the provision of parks, community and cultural facilities, and so on, are identified and described in Chapter 5 of this Structure Plan report.

The District's population growth model shows that there will be a steady population increase over the next 30 years, in this area. Projected growth under high, medium and low growth scenarios is shown in the table below.

Figure 19 Projected Population Growth in the Tikipunga Area

Projected Population	2006	2011	2016	2021	2026	2031	2036	2041
High	7,677	7,937	8,129	8,594	9,032	9,441	9,850	10,258
Medium	7,677	8,012	8,180	8,469	8,729	8,950	9,170	9,389
Low	7,677	8,086	8,231	8,345	8,427	8,458	8,490	8,520

Source: Whangarei Growth Model, January 2009

The additional land made available for development through the proposals, as outlined above, has been calculated to accommodate the high growth scenario figures. These figures were adopted by Council in its meeting of 22 October 2008.

The table below shows the different types of land made available through the land-use proposals, along with the possible number of allotments that can be created and the potential population it can accommodate.

Figure 20 Potential Capacity of the Proposed Land Use in the Tikipunga Area

	Potential Lots	Potential Accommodating Population
Current	2,900	7,677
Proposed Living 1 (including existing)	8,871	25,371
Proposed Living 2 (including existing)	862	2,465
Proposed Living 3 (including existing)	945	2,703
Proposed Rural Residential (including existing)	121	346
Countryside (including existing)	497	1,421
Total	**11,296**	**32,206**

	Potential Lots	Potential Accommodating Population
Percent of 2041 Projection		419.50%

Source: Whangarei Growth Model, January 2009

The above table shows that the land use provisions can create a maximum total number of 11,296 individual allotments. This means that the land can support a similar number of households. Using an average household size of 2.86 people, the maximum capacity of the provisions is 32,306 people, when all land is subdivided into its minimum allowable sizes for each land use zone, and taken up. When compared with the projected population growth, it is clear that these provisions will have the capacity to accommodate much more development than the natural population growth, in the long term. However, the calculated number of lots does not reflect the actual numbers, or the eventual lot sizes when land is fully developed. Aside from the District Plan rules, other factors such as economic cycles and other social preferences, can influence the actual lot sizes and the pattern of development.

5 Implementation

5.1 Implementation Issues

Implementation of the proposals in the Structure Plan takes place over a long period of time through project development by all stakeholders. Council has a lead role in co-ordinating, and sometimes providing, infrastructure ahead of development, and recovers costs, with time, through development and financial contributions. Some of the proposals need to be incorporated into the District Plan by way of plan change and be implemented as part of the wider issues of the District Plan.

The following section outlines action responsibilities and priority guidelines for the proposals. In regard to timing and costing of projects, it is considered that more conclusive timeframes and costs of individual projects can only be determined after further investigation.

It is important to note that project development is a shared responsibility between Council and the private sector. Council will take a leading role in policy issues, while the private sector develops land in a manner that reflects the desired outcomes from this Structure Plan.

5.2 Project Identification and Prioritisation

The following projects have been identified from the previous sections on Development Issues and Spatial Strategy. The priority of the implementation measures shall be determined through an ongoing community consultation process:

Figure 21 Identification & Prioritisation

Economic Development

Method – Specific Implementation Measures	Priority	Responsibility
Re-zone commercial land, as needed, around current commercial areas	Low	Policy & Monitoring Department

Infrastructure

Transportation

Method – Specific Implementation Measures	Priority	Responsibility
Traffic management and calming around Kiripaka roundabout area Investigate possible pedestrian crossing sites	Medium	Roading Department
Upgrade the road to the east coast beaches Review speed limits Consider widening road, removing ditches, adding passing lanes, removing one lane bridges	Low	Roading Department
Upgrade Vinegar Hill Road Review speed limits Consider widening road, removing ditches, adding passing lanes	Low	Roading Department
Implement school zones for: Glenbervie, Totara Grove and Tikipunga Primary Schools, and Tikipunga High School	Low	Roading Department
Complete Kamo Bypass, Stage II Designate and construct new road	High	Roading Department
Complete Spedding Rd link to Kamo Bypass, Stage II, and Otangarei Designate and construct new road	High	Roading Department
Increase and upgrade cycleways Complete Cycle Strategy Investigate routes in and around study area	High	Parks, Roading Department
Increase and upgrade footpaths Investigate and place on Footpath Needs Programme	Medium	Roading Department

Method – Specific Implementation Measures	Priority	Responsibility
Safe and efficient roading network Continue to plan for and undertake network upgrades, as required	Ongoing	Roading Department

Wastewater

Method – Specific Implementation Measures	Priority	Responsibility
Extend wastewater reticulation to Glenbervie School and Marae Consult further with residents and schedule works, as required	Medium	Waste & Drainage Departments
Economic and environmentally sustainable wastewater disposal Ensure future development is connected to a sewerage system or suitably-designed, on-site system. Monitor existing on-site systems	Ongoing	Waste & Drainage Departments

Stormwater

Method – Specific Implementation Measures	Priority	Responsibility
Manage stormwater disposal around the Tikipunga Urban Area Investigate stormwater system where problems are identified	Medium	Waste & Drainage Department
Economic and environmentally sustainable stormwater disposal Undertake works identified in Stormwater Catchment Management Plans	Ongoing	Waste & Drainage Departments

Water Supply

Method – Specific Implementation Measures	Priority	Responsibility
Extend water reticulation to Glenbervie School and Marae Consult further with residents and schedule works, as required	Medium	Water Department
Adequate supply and quality of reticulated water Ensure continued compliance with relevant standards Continue to plan for adequate water supply capacity as population increases	Ongoing	Water Department

Open Space and Recreation

Method – Specific Implementation Measures	Priority	Responsibility
Improve Whangarei Falls Complete and implement Whangarei Falls Management Plan, addressing issues such as security, improving and providing new facilities and links to other reserves, and to the city Construct an additional bridge over the Hatea River, upstream of the Falls	ongoing	Parks Department
Enhance and develop the Hatea River and surrounds Develop the Hatea River Heritage Trail within next 5 years Improve access to the Hatea River and estuary Undertake tree planting to aid stream bank stability Work in conjunction with other agencies to improve water quality in the river	ongoing	Parks Department
Develop and enhance the Tikipunga Domain Create a 'recreation hub' Review facilities, including a possible upgrade of toilets, and provide drinking fountains Renew the old drainage system on playing fields	Ongoing	Parks Department
Develop Haruru Neighbourhood Reserve	Medium	Parks Department
Develop a senior play area at Korau Reserve, so youth have more options for informal recreation	Ongoing	Parks Department
Develop walkways, reserves and linkages	Ongoing	Parks Department

Method – Specific Implementation Measures	Priority	Responsibility
Investigate possible walkways and place on programme Expand reserve network as population increases Investigate linkages between reserve areas		
Weed management along Council roads and in Council reserves Review and revise weed management programmes in Council's Roading and Parks' budgets	Ongoing	Parks, Roading Department

Community

Method – Specific Implementation Measures	Priority	Responsibility
Provide facilities for younger persons Implement findings of 'Youth Strategy' Identify facilities/opportunities specific to the study area and develop Investigate the provision of an activity area, e.g. skateboard park, bike track, bmx trail	Ongoing	Parks and Community Department
Upgrade library and community centre Investigate needs and schedule works, as necessary	Ongoing	Community Enterprises Department

Rural Residential Development

Method – Specific Implementation Measures	Priority	Responsibility
Develop the Rural Residential Environment (Zone) Prepare District Plan Change to include policies, objectives and rules for new Environment in District Plan Notify District Plan Change for public submission, undertake hearings and resolve any appeals	High	Policy & Monitoring Department
Rezone areas to Rural Residential Environment Confirm boundaries of Rural Residential Environment Prepare District Plan Change to provide for Rural Residential Environment Notify Plan Change for public submission, undertake hearings and resolve any appeals	Medium	Policy & Monitoring Department

Residential Development

Method – Specific Implementation Measures	Priority	Responsibility
Rezone areas as Living 2 Environment Confirm boundaries of new Living 2 Environment Prepare District Plan Change to provide for new areas of Living 2 Environment Notify Plan Change for public submission, undertake hearings and resolve any appeals	High	Policy Department

Special Features

Method – Specific Implementation Measures	Priority	Responsibility
Protect existing bush areas Complete Tree Strategy and implement Prepare District Plan Change to include policies, objectives and rules for tree protection in District Plan Notify District Plan Change for public submission, undertake hearings and resolve any appeals Encourage bush covenants by publicising the availability of rates relief for covenanted areas Investigate protecting Puketotara Forest	High	Policy, Parks, Rates Department
Protect stone walls	High	Parks, Policy Department

Method – Specific Implementation Measures	Priority	Responsibility
Map historic stone walls in the area Review current protection of stone walls in the District Plan. If necessary, prepare a Plan Change and undertake the process Consider non-regulatory methods to achieve protection of stone walls		
Protect historic and cultural sites Upgrade information on archaeological sites and map accurately Review current protection in District Plan. If necessary, prepare a Plan Change and undertake the process Consider non-regulatory methods to achieve protection of historic nd cultural sites	High	Parks, Policy Department

Appendix 1 Resource Notations

Heritage Trees list - Extract of the Whangarei District Plan

No	Common Name	Botanical Name	STEM Score	Site Address	Legal Description	Map No
244	Puriri	Vitex lucens	114	33 Kiripaka Road	Lot 1 DP 43988	36
245	Totara (2)	Podocarpus totara	102	40 Tapper Crescent	Lot 39 DP 72561	36
246	Pohutukawa, Red Oak, Puriri	Metrosideros excelsa; Quercus rubra; Vitex lucens	111 111 102	194 Corks Road	Pt Section 108, 109 DP 45687	36
247	Totara	Podocarpus totara	120	17 Meadow Park Cres	Lot 115 DP 58121	36
248	Totara	Podocarpus totara	105	54 Boundary Road	Lot 5 DP 61344	36
504	Tulip Tree	Liriodendron tulipifera	150	151 Kiripaka Road	Lot 7 DP 40467	36

Heritage Buildings - Extract from the Whangarei District Plan

No	Building Site or Object	Address	Map No	Legal Description
Group II				
101	Barn - two storey, wooden	Ngunguru Road Glenbervie	12	Pt Huanui Blk V
113	Douglas Stone Barn	Ngunguru Road RD 2	12	Lot 2 DP 208847
115	Hutchinson Farmhouse (Former)	Ngunguru Road Glenbervie	12	Pt Huanui Blk V
147	Old Flour Mill and Brewery	Millers Lane	36	Pt 2 DP 4903
140	Mitchell House	Vinegar Hill Road	34	Lot 1-6 DP 172959
157	Stone Stable and Implement Shed	Ngunguru Road Glenbervie	12	Pt Huanui Blk V

Sites of Significance to Maori – Extract of the Whangarei District Plan

No	Site	Legal Description
70	Waahi-tapu	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Puna Wai (sacred springs)	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Soda Springs	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Healing Pond	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Sacred Maunga	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Sacred Hatea River and Tributaries	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Kahikatea Ngahere	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Ngahere and Mahinga Kai	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Mahinga Kai	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	All stone walls, including ruins surrounding Kake land	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Taraire Ngahere	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Ngahere	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Repo	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Urupa (Davis)	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Willow trees	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Harakeke	Pt Pehiaweri Blk Blk V Whangarei SD – Maori Church
70	Puriri Ngahere	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Puke tapu (sacred Maunga)	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Soda Springs	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church

No	Site	Legal Description
70	Repo	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Ancient Toka	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
70	Pehiaweri Marae, Urupa and Church	Pt Pehiaweri Blk Blk V Whangarei SD - Maori Church
71	Puketotara Maunga, Waahi Tapu	Lot 3 DP 91566 Pt Lot 5 DP 91567 Blk V Whangarei SD Lot 1 DP 93973 Blk V Whangarei SD Lot 4 DP 91566 Blk V Whangarei SD - Scenic Reserve Lot 1 DP 74021 Blk V Whangarei SD Lot 2 DP 91566 Blk V Whangarei SD Lot 1 DP 150726 Whangarei SD Blks XI XII Opuawhanga SD-TNA Bal at 330/335

Esplanade Priority Areas

Name of Water Body	Values	Map Ref
Hatea	Outstanding Recreational	36,38
Paranui	High Ecological	36
Otangarei	Outstanding Recreational	36

Mineral Extraction Areas

ME 8 Dickson's Quarry

Building Line Restrictions

Road Name	Location		Building Line Restriction (metres)	Environment
	Start	**Finish**	**Direction**	
Kiripaka Rd	Waiatawa Rd	Corks Rd	12.5 from centre	Living 1
Waiatawa Rd	Whareora Rd	Kiripaka Rd	12.5 from centre	Living 1

Mining Hazard Areas

Mining Hazard Area 2 indicates areas in which there is up to 100 metres of cover and 'medium' subsidence is possible; and where there has been 2-seam pillaring and greater than 100 metres of cover exists.

Mining Hazard Area 3 indicates areas in which there is greater than 100 metres of cover. Although this is a low risk zone, it is possible for buildings to be affected by mining.

Appendix 2 Important Geological Sites and Landforms within the Study Area

Source: Inventory and Maps of Important Geological Sites and Landforms in the Northland Region

Edited by Jill A. Kenny and Bruce W. Hayward

First Edition 1996

Importance

a	International	site of international scientific importance
b	National	site of national scientific, educational or aesthetic importance
c	Regional	site of regional scientific, educational or aesthetic importance

Vulnerability

1	Highly vulnerable to complete destruction or major modification by humans
2	Moderately vulnerable to modification by humans
3	Unlikely to be damaged by humans
4	Could be improved by human activity
5	Site already destroyed (not necessarily by human activity)

Pukepoto basalt cone

Description: A steep-sided bush and farm-covered cone. Remnants of the first eruption form a boulder-covered hill on the western flank of the younger Pukepoto cone. Pukepoto cone covers the vent of the original hill, is steep sided and breached by rafting of lava to the south. The Waitangi Stream, flanking the lava field to the south, has exposed basalt at locality Q06/368145. The cone stands 60m above the surrounding lava field. Two periods of cone building resulted in three separate flows.

Locality: Adjacent to, and north of, Ngunguru Road, 7.5 km ENE of Kamo township

Vulnerability = 1Importance = C

Glenbervie (Maruata) volcanic cones

Description	There are two cones, approximately 650m apart. The older, farm-covered cone lies to the west, Q06/319143, of the main cone, Maruata, Q06/327147. Maruata shows two eruption points, with the youngest and largest crater being breached to the south. The centre is approximately 2-3 km in diameter and its height is 200m ASL, rising 80m above the surrounding areas. Maruata cone had a distinct volcanic form and is bush covered. On the north side a small forestry settlement has been established.
Locality	This centre lies between Maruata Road and Puketotara Road, approximately 5km NE of Kamo
Vulnerability	= 2
Importance	= C

Whangarei Falls

Description	A scenic waterfall where the Hatea River plunges over the eroding edge of a columnar jointed Horeke basalt flow originating from Vinegar Hill. It measures some 30m in total thickness, with the base of the basalt corresponding with the base of the Falls.
Locality	50m downstream from Tutukaka Road Bridge over the Hatea River, approximately 1km east of Tikipunga, within the outer suburbs of Whangarei City.
Vulnerability	= 3
Importance	= C

Kamo Limestone Pinnacles

Description	Three or four and vertical sided, 20-30m high, 10-20m across pinnacles of Whangarei Limestone, on a small low knoll in a bush patch.

Locality approximately 1km east of SH 1 on Kamo Springs flat.

Vulnerability = 1

Importance = C

Appendix 3 Designations

Requiring Authority	Abbreviation used
Minister of Education	DE
Northpower Limited	DNP
Telecom New Zealand Limited	DT
Transit New Zealand	DTNZ
Tranz Rail	DTR
Whangarei District Council	DW

Extract of the Designation table of the Whangarei District Plan

ID	Site Name/Location of Site	Designation Purpose	Legal Description/ Area	Underlying Environment	Map	Subject to conditions
DE 19	Tikipunga High School and House and Forest View Kindergarten, 194 Corks Road Whangarei	Tikipunga High School and House, and Forest View Kindergarten	Pt Allots 107 108 and 109 Parish of Whangarei (10.5612 ha)	Living 1	34, 36	1, 2, 3
DE 21	Tikipunga Primary School, 11 Tania Place, Whangarei	Tikipunga Primary School	Allot 193 Parish of Whangarei and Lot 273 DP 72458 (2.3910 ha)	Living 1	36	1, 2, 6
DE 22	Totara Grove Primary School and Playcentre, Corks Road, Whangarei	Totara Grove Primary School and Playcentre	Pt Lot 7 DP 1583, Lot 26 DP 48880 (2.2692 ha)	Living 1	33, 34	1, 2, 6
DE 29	Glenbervie Primary School and House, Ngunguru Road, Glenbervie	Glenbervie Primary School and House	Pt Lot 7, Deeds P42 (2.2460 ha)	Countryside	34	1, 2
DNP 8	Tikipunga Substation, Waiatawa Rd, Whangarei	Electricity purposes (Substation)	Lot 2, DP 179094 (0.288 ha)	Living 1	36	
DT 23	Glenbervie PCM Kiripaka Rd Glenbervie	Land uses for telecommuni-cations and radio communication purposes including telephone exchange	Part Pukepoto A No 3 Blk SO Plan 54307 Blk V Whangarei SD CT 75B/724	Countryside	12	1, 3
DTNZ 1	State Highway 1N Whangarei District-Kaipara District Boundary at the Brynderwyns to Whangarei District Far North Boundary at Hukerenui	State Highway 1N	Various	Various	Various	
DTNZ 1.5	State Highway 1 Snake Hill Springs Flat	State Highway 1	Various	Countryside	7E	12E
DTR 1	Main railway line within Whangarei District	Railway Purposes	Various	Various	Various	

ID	Site Name/Location of Site	Designation Purpose	Legal Description/ Area	Underlying Environment	Map	Subject to conditions
DW 10	Whareora Road Wastewater Pumping Station	Wastewater Pumping Station	Sec 59 and 60 Blk V Whangarei SD	Living 3	36	
DW 31	Proposed Road Reserve, Wanaka St	Proposed Road Reserve	68 61427	Living 1	36	
DW 53	Water Supply, Cobham Place	Pump Station and Reservoir	Lot 19 DP 41542	Living 1	36	
DW 63	Water Supply, Whareora Road	Pump Station	Pt Allot W17 Parahaki Parish Blk V Whangarei SD	Countryside	36	
DW 65	Water Supply, Waitaua Road	Reservoir	Pt Allot 86 Whangarei Parish Blk VIII Purua SD	Countryside	33	
DW 83	Proposed Esplanade Reserve, Corks Rd, Whangarei	Proposed Esplanade Reserve	Pt Lots 6,7,12 and 13 DP 1583	Living 3	34	
DW 84	Uplifted	Reserve		Living 1	34	
DW 85	Proposed Esplanade Reserve, Boundary Rd, Whangarei	Proposed Esplanade Reserve	Pt Allot 46 Whangarei Parish	Living 3	36	
DW 86	Proposed Esplanade Reserve, Boundary Rd, Whangarei	Proposed Esplanade Reserve	Lot 2 DP 95642 and Lot 1 DP 56593	Living 3	36	