

Waimauku Structure Plan



Waimauku Structure Plan

Constraints and Opportunities Report



Contents

1. **Executive Summary**
2. **Introduction to project**
3. **Constraints and Opportunities**
 - 3.1 Cultural Heritage
 - 3.2 Landscape
 - 3.3 Prime Agricultural Land
 - 3.4 Natural Heritage and Features
 - 3.5 Hazards - Flooding
 - 3.6 Hazards - Land Stability
 - 3.7 Hazards - Fault Lines
 - 3.8 Hazards - Potentially Contaminated Land
 - 3.9 Economic
 - 3.10 Infrastructure
 - 3.10.1 Basis
 - 3.10.2 Wastewater
 - 3.10.3 Drinking Water
 - 3.10.4 Stormwater
 - 3.10.5 Open Space
 - 3.10.6 Transportation
 - 3.10.7 Schools
 - 3.10.8 Other Infrastructure
4. **Matters to Consider in the Development of Options**
 - 4.1 Constraints and Opportunities
 - 4.2 Phase 1 Consultation
 - 4.3 Guiding Policy and Statutory Documents

Appendix A – Plan Process Diagram

Appendix B – Cultural Heritage Maps

Appendix C – Landscape Assessment Maps

Appendix D – Prime Agricultural Land Maps

Appendix E – Natural Heritage and Features Maps

Appendix F – Hazards – Flooding Maps

Appendix G – Hazards – Land Stability Maps

Appendix H – Hazards – Potentially Contaminated Land Maps

Appendix I – Infrastructure Maps

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1. Executive Summary

Rodney District Council is undertaking a Structure Planning exercise for the Waimauku area in response to a community initiative to address growth pressures in the area. The Structure Plan will define a vision for the future of Waimauku and develop a spatial plan to guide growth within the study area over the next 10–20 years.

Constraints and opportunities mapping is a traditional approach used by land use planners to ensure that any future development takes place in the least sensitive and most suitable areas.

The constraints and opportunities research examined various areas as outlined below:

- Cultural Heritage
There are 28 sites/areas in the study area that have been identified as having significance in terms of cultural heritage. It is noted that in some cases the sites identified may require further investigation to assess their heritage value as some sites may be destroyed, or have little heritage value left. The cultural heritage sites identified are recommended to be avoided for any future urban growth. There may be some sites where mitigation could be used in terms of any future urban growth (rather than avoidance). In any case, these cultural heritage sites should be taken into account as a constraint to any future urban growth.

The Cultural Heritage constraints and opportunities are detailed in section 3.1 of this report and shown on the maps in **Appendix B**.

- Landscape
Generally speaking, the prominent hill and ridgeline landscape features are recommended for protection or limited carefully managed landscape change. In addition, the flood prone lowlands along the main waterways are recommended for protection, enhancement of their ecological and cultural values and incorporation within open space networks. The more elevated valley and hill toe slopes are identified as areas most able to accommodate landscape changes through well planned and managed future growth.

The landscape constraints and opportunities (as depicted by their landscape structure zones) are detailed in section 3.2 of this report and shown on the maps in **Appendix C**.

- Prime Agricultural Land
The areas of prime agricultural land in the study area cover the Waimauku township itself and most of the land to the east towards Huapai. The floodplain area of the Kaipara River is also included, as is an area in the Muriwai Valley and the productive plateau to the south west of the township.

These areas are to be avoided where possible, although the Land Use Capability (LUC) is a tool for defining boundaries in principle, rather than detail, and more detailed assessment may be necessary if defining boundaries becomes critical.

The prime agricultural land constraints and opportunities are detailed in section 3.3 of this report and shown on the maps in **Appendix D**.

- Natural Heritage and Features

The Significant Natural Areas within the study area are mostly found along the Taylor Road ridge, School/Fletcher/Hamilton Road ridges. Bush lots are scattered throughout the study area, with a concentration in the southern and northern parts. The riparian margins around streams spread into all parts of the study area.

The SNA and bush lot areas should be avoided in terms of any future urban development. There are opportunities for strengthening ecological corridors linkages running from north to south in the study area. There are also opportunities for the implementation of riparian margins to the Kaipara River and most of the lower order streams.

The natural heritage and features constraints and opportunities are detailed in section 3.4 of this report and shown on the maps in **Appendix E**.

- Hazards - Flooding

The floodplain areas in the study area follow the Kaipara River through the middle of the study area. There are areas of the existing Waimauku township that are in the floodplain areas. The riparian margins around streams spread into all parts of the study area.

The areas identified as being within the floodplain should be avoided in terms of any future urban development. There are also opportunities for the implementation of riparian margins to the Kaipara River and most of the lower order streams.

The flooding constraints and opportunities are detailed in section 3.5 of this report and shown on the maps in **Appendix F**.

- Hazards – Land Stability

From the land stability study undertaken, two broad zones have been developed defining inferred geotechnical risk in the Waimauku Structure Plan area.

The low stability constraints zone is likely to require minimal geotechnical input with respect to stability for the future urban and rural-residential development. Dependant on specific proposals, earthworks required could be minimal along with remedial or stability improvement measures.

The moderate to high stability constraints area will require more detailed geotechnical involvement, and many areas may require significant earthworks and/or stabilising measures. Some areas of existing instability may not be suitable for any development. Furthermore, it should be noted that it is likely some areas exist within this moderate to high constraints zone, that may only require limited earthworks or stability improvement for small scale development.

The land stability constraints and opportunities are detailed in section 3.6 of this report and shown on the maps in **Appendix G**.

- Hazards – Fault Lines

There are no geologically active faults in the study area. The guideline “*Planning for Development of Land on or Close to Active Faults*” produced by the Ministry for the Environment and the Institute of Geological and Nuclear Sciences Limited only requires hazard avoidance zones where a fault is identified as being active.

The hazards – fault lines constraints and opportunities are detailed in section 3.7 of this report.

- Hazards – Potentially Contaminated Land

There are 5 potentially contaminated sites in the Waimauku Structure Plan study area. The actual areas on each site that are potentially contaminated are not known so the entire property is identified as a matter of precaution.

All sites identified are discrete areas and should be avoided in terms of any future urban development. It is noted that some sites may be able to be managed through remedying by cleaning the site of contaminants.

The potentially contaminated land constraints and opportunities are detailed in section 3.8 of this report and shown on the maps in **Appendix H**.

- Economic

The key themes and recommendations to emerge from economic reports as relating to the Waimauku study area are:

- No major area of business land is needed in Waimauku.
- Tourism/recreation is a growing industry and has good fundamentals to build on.
- Tourist accommodation is needed (mid-range).
- Lifestyle block threat.
- Infrastructure.

The economic constraints and opportunities are detailed in section 3.9 of this report.

- Infrastructure – Wastewater

Waimauku is currently serviced by individual on-site treatment and disposal systems, and a number of privately owned systems serving a cluster of houses. In 2005 Council purchased 80 hectares of land at 139 Tapu Road, Huapai for the purpose of constructing a ‘standalone’ wastewater treatment plant and disposal field to service both the existing communities and growth in Kumeu, Huapai, Waimauku and Riverhead.

Council is now concerned about the affordability of the project to existing households in the area, and is investigating three ways forward:

- Connection to the Water Care regional sewerage system.
- Alternative means of funding the facility at Tapu Road.
- Reviewing the impacts of remaining with the status quo.

The infrastructure - wastewater constraints and opportunities are detailed in section 3.10.2 of this report.

- Infrastructure – Drinking Water

At present there is no water supply to the Waimauku area with all properties relying on private supplies such as rainwater tanks and bores. There are currently no plans to provide a public water supply to Waimauku. Options for Waimauku could include:

- Continue with private water supplies.
- For developments, it might be possible to provide a private water treatment system.
- Water Care has plans to build a new storage dam at Ararimu in Riverhead Forest. This could provide a reticulated supply to the Kumeu area including Waimauku, but the project would be well into the future, if it proceeds at all.

The infrastructure – drinking water constraints and opportunities are detailed in section 3.10.3 of this report.

- Infrastructure – Stormwater

The Waimauku area (particularly around the township) has issues with flooding. The stormwater constraints are particular to three areas in and around the Waimauku township that are related to flooding.

The areas are the catchments of Cloverfields Drive and Wintour Road, the south slope side of Renall's hill, and the catchment from Amber Place south towards Muriwai. These areas will require careful consideration in terms of any future urban development and the implications for stormwater.

The stormwater infrastructure constraints and opportunities are detailed in section 3.10.4 of this report and shown on the maps in **Appendix I**.

- Infrastructure – Open Space

The Council, Department of Conservation, and Forest and Bird own a number of open space reserves within the study area.

- It is noted that in the township the reserves are predominately on the eastern side of Muriwai Road and there is a need for a neighbourhood reserve on the western side of Muriwai Road, south of SH16.
- The Council's draft Bridleways Strategy identifies a possible bridleway route in the Taha Rd area.
- Council has recently acquired a large block of land to be used for reserve adjoining Glasgow Reserve. The future uses of this reserve will be established through a reserve management plan process.
- There are no major areas of sports fields in the study area, although the Huapai Domain to the east has a quantity of sports fields. There is an identified need for active recreation areas within the Huapai area (4 ha by 2011 and 7 ha beyond 2011).

The open space infrastructure constraints and opportunities are detailed in section 3.10.5 of this report and shown on the maps in **Appendix I**.

- Infrastructure – Transportation

Any significant future development of Waimauku will result in the number of trips generated in the area increasing by a factor of 10 to 20 times the current level. Any development of this scale will require its own significant transport network, comprising roads, walkways, and probably cycleways and infrastructure for public transport. It will also need to be integrated with the existing local road network and State Highway network. Demonstrating integration of land-use and the proposed transport system would be a requirement of any Plan Variation to enable this type of development.

The infrastructure - transportation constraints and opportunities are detailed in section 3.10.6 of this report.

- Infrastructure – Schools

The Ministry of Education (MoE) is currently looking to purchase and designate a site for a new primary school in the study area. This school would serve the Muriwai and Waimauku townships as well as the surrounding rural area (along with the existing Waimauku School). The new school would take the pressure off Waimauku Primary School which is at capacity with its current roll of 638.

The exact site that the MoE is looking at is not yet public information, although its general area is in the southern portion of the study area (as shown in **Appendix I**).

The infrastructure - schools constraints and opportunities are detailed in section 3.10.7 of this report.

- Infrastructure – Other

The Proposed Rodney District Plan 2000 identifies some areas of land designated by requiring authorities for infrastructure use. There are also other infrastructure facilities that are not designated, but are nonetheless worthy of noting in preparing opportunities and constraints maps.

The other infrastructure constraints and opportunities are detailed in section 3.10.8 of this report and shown on the maps in **Appendix I**.

The constraints and opportunities of the land in the study area will be considered in the next stage of the structure plan process, being the development of options. Other matters will also be considered including the feedback from the phase 1 consultation and guiding policy and statutory documents as explained in section 4 of this report.

2. Introduction to project

Rodney District Council is undertaking a Structure Planning exercise for the Waimauku area in response to a community initiative to address growth pressures in the area. The Structure Plan will define a vision for the future of Waimauku and develop a spatial plan to guide growth within the study area over the next 10–20 years.

The project has eight phases before the final Waimauku Structure Plan is adopted and four of these phases are public consultation phases. A copy of the Process Diagram is included in **Appendix A**.

The constraints and opportunities research is the third phase of the project and has been influenced by the earlier public consultation, which suggested areas that the Council should be investigating and specific things to investigate within those areas.

The areas of constraints and opportunities that this report examines are:

- Cultural Heritage
- Landscape
- Prime Agricultural Land
- Natural Heritage and Features
- Hazards
 - Flooding
 - Land Stability
 - Fault Lines
 - Potentially Contaminated Land
- Economic
- Infrastructure
 - Wastewater
 - Drinking Water
 - Stormwater
 - Open Space
 - Transportation
 - Schools
 - Other Infrastructure

This report summarises the information relating to the above constraints and opportunities. For further information the related reports should be referred to (these documents can be accessed on the project website www.rodney.govt.nz/waimauku):

- *Phase 1 Consultation - Analysis of Feedback Forms*, Rodney District Council, December 2006.
- *Waimauku Structure Plan - Cultural Heritage Report*, Rodney District Council, May 2007.
- *Land Stability Constraints Zoning*, Riley Consultants, May 2007.
- *Waimauku Structure Plan Landscape Assessment*, Boffa Miskell, May 2007.
- *Kumeu/Kaipara Integrated Catchment Management Plan*, Rodney District Council, May 2007

- *Supply of New Business Land in the Northern and Western Sectors*, Speer and Starr, November 2005.
- *Economic Development Trends in the Rodney District Western Sector – A project to assist with achieving the district strategy Vision Rodney in an important growth area*, Speer and Starr, April 2006.
- *Waimauku Structure Plan – “Transport Constraints and Opportunities”*, Projenz Limited, May 2007.

The Council will use the findings of this constraints and opportunities research to inform the next stage which is the development of options.

3. Constraints and Opportunities

Constraints and opportunities mapping is a traditional approach used by land use planners to ensure that any future development takes place in the least sensitive and most suitable areas.

The goal of the constraints mapping is to identify opportunities and restrictions to any future development in the study area. The constraints maps will help guide the development of options in the next stage of the structure plan process and can lower the environmental impact, and possibly the cost of any future development. The opportunities are mapped in order that they can be considered in the development of options stage.

As explained in section 4 of this report, all the constraints have been mapped but may have some variances in them. For example, not all the constraints automatically mean they are “no go” areas. Some areas may be suitable to for future development with the use of mitigation. There will also be areas of conflict between the different areas, with one area perhaps classifying land as a constraint while another sees it as an opportunity. These issues will be examined during the synthesis involved in the development of options stage of the structure plan.

The constraints and opportunities maps for each subject are shown on two maps. The first is a small scale map showing the whole study area. The second map is a large scale map being a zoomed in area of the township itself and its immediate surrounds. Not all areas of research have maps associated with them.

3.1 Cultural Heritage

3.1.1 Basis

Cultural heritage has been assessed within the study area as Strategic Policy 2.6.2(2)(ii) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “Areas with significant environmental, **heritage** or landscape values and areas with high natural character, including areas identified in Appendix B are avoided”.

3.1.2 Methodology

There are a number of sites and areas in the study area for the Waimauku Structure Plan that have been identified as having significance in terms of cultural heritage. Some of these sites have been formally visited and recorded on a database, while others have simply been reported. This first stage of reporting may well encourage residents and local historians to identify other significant sites for inclusion onto a cultural heritage database.

Some of the sites are legally protected through the Resource Management Act 1991 and the Historic Places Act 1993. Others have no statutory protection. The identification of sites in this report does not purport to give any statutory protection.

Table 1 below identifies some of the cultural heritage sites in the Waimauku Structure Plan study area. Maps identifying the locations of these items is included in **Appendix B** (using a 100m buffer). These sites have been collated using the:

- Historic Places Trust Register
- New Zealand Archaeological Association Site Recording Scheme
- Proposed Rodney District Plan 2000
- Rodney District Heritage Study
- Cultural Heritage Inventory (ARC)
- Phase 4 background report no. 5.4 – historical perspectives on the Southern Kaipara, Lower Waikato and Wairoa Valley. Part I: Southern Kaipara.
- Feedback during Phase 1 Consultation on the Waimauku Structure Plan project

For more information on cultural heritage in the study area please refer to the *Waimauku Structure Plan - Cultural Heritage Report*, Rodney District Council, May 2007.

3.1.3 Cultural Heritage Constraints and Opportunities

Table 1:
Identified Cultural Heritage Sites in the Waimauku Structure Plan Study Area.

No	Site Name	Location	*Reference Number	**Legally Protected
1	St Martin’s Church	912 SH16, Waimauku.	CHI: 11930 PDP: H053	Yes (2)
2	Terraces	119 School Rd, Waimauku.	CHI: 12331	Yes (2)

3	Waimauku Dairy Factory	Station Rd, Waimauku.	CHI: 13235	No
4	Waimauku Hunting Lodge	307 Waikoukou Valley Rd, Waimauku.	PDP: H094	Yes (2)
5	Wilkins House	Old North Rd, Waimauku.	PDP: H092	Yes (2)
6	Former Blacksmith's	Station Rd, Waimauku.	CHI: 13244	No
7	Fruitlands Fruit Shed	Trig Rd, cnr Awa Rd, Kumeu.	CHI: 16400	No
8	Tauwhare Pa (Waahi Tapu)	1416 SH16, Kiwitahi	HPT: 7361 CHI: 9075	Yes (1)
9	Blake's Mill	Old North Rd, RD2 Waimauku.	CHI: 9497 NZAA: Q10/697	Yes (1)
10	Waimauku Memorial Hall	Station Rd, Waimauku.	N/a	No
11	Pear tree from Wilkins Orchard	Old North Rd, Waimauku.	N/a	No
12	Waimauku Peoples Church	Station Rd, Waimauku.	N/a	No
13	Packing Shed	Worrall Rd, Taupaki.	N/a	No (1?)
14	Farm Shed	Worrall Rd, Taupaki.	N/a	No (1?)
15	Old Bridge Site	Old North Rd, Waimauku.	N/a	Yes (1)
16	Old Well	Old North Rd, Waimauku.	N/a	Yes (1)
17	Davis Homestead	Old North Rd, Waimauku.	N/a	No
18	Stables	Old North Rd, Waimauku.	N/a	Yes (1)
19	Site of Goods Tavern	Old North Rd, Waimauku.	N/a	Yes (1)
20	Site of Blake's House	Old North Rd, Waimauku.	N/a	Yes (1)
21	Pits	Maramatawhana Rd, Reweti.	CHI: 7180 NZAA: Q10/63	Yes (1)
22	Pit/Terraces	Fletcher Rd, Muriwai.	CHI: 7924 NZAA: Q10/482	Yes (1)
23	Pit/Terraces	Fletcher Rd, Muriwai.	CHI: 7923 NZAA: Q10/481	Yes (1)
24	Reweti Marae	SH16, Reweti	N/a	No
Other Sites (not already in table) identified during feedback in Phase 1 Consultation				
25	Old Butchers Shop/Brick Bakehouse	Station Rd, Waimauku	N/a	No
26	Historic Settlers Hut and Bullock Track	Hinau Rd, Waimauku	N/a	No (1?)
27	Original Waimauku School classrooms	Muriwai Rd, Waimauku.	N/a	No
28	Chimney from old shack	Waikoukou Valley	N/a	Yes (1?)

		Rd, Waimauku		
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* CHI (Cultural Heritage Inventory), NZAA (New Zealand Archaeological Association Site Recording Scheme), PDP (Proposed Rodney District Plan 2000).

** 1 = protected through Historic Places Act definition of “*archaeological site*”. 2 = protected through Proposed Rodney District Plan 2000.

The cultural heritage sites identified in **Table 1** and shown on the map in **Appendix B** are recommended to be used as a constraints layer. By ‘constraint’ this means that sites with heritage values are recommended to be avoided for any future urban growth, which is consistent with the strategic policies on urban containment in section 2.6.2(2)(ii) of the Auckland Regional Policy Statement.

It is noted that in some cases the sites identified in **Table 1** and shown on the map in **Appendix B** may required further investigation to assess their heritage value as some sites may be destroyed, or have little heritage value left. There may be some sites where mitigation could be used in terms of any future urban growth (rather than avoidance). In any case, these cultural heritage sites should be taken into account as a constraint to any future urban growth.

3.1.4 Constraints and Opportunities Map

The Cultural Heritage constraints and opportunities are shown on the maps in **Appendix B**.

3.2 Landscape

3.2.1 Basis

The landscape has been assessed within the study area as the Strategic Policies on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) state that limited extensions may be made to rural settlements from time to time, but only where:

- 2.6.2(2)(ii) *“Areas with significant environmental, heritage or **landscape values and areas with high natural character**, including areas identified in Appendix B are avoided”.*
- 2.6.2(2)(vi) *“The new boundary provides a clear differentiation between urban and rural areas including through the use of water catchment boundaries and or **visual catchment boundaries** in order to reduce pressure for future urban expansion”.*
- 2.6.2(2)(vii) *“In deciding the location of any future extension consideration will be given to whether the extension makes use of, or brings development closer to, **boundaries that provide a defensible long term limit to urban development**”.*

3.2.2 Methodology

The methodology adopted has comprised both ‘desk top’ GIS analysis and field survey to determine boundaries and identify the particular landscape characteristics within the study area. There is considerable diversity in the landscape surrounding the Waimauku settlement, with both river/stream corridors and dissected hill country within a relatively limited physical area. The settlement is located in the vicinity of an historical portage and further defined by its location on the rail corridor.

The identified study area has been delineated into two major landscape types, namely Upland and Lowland Systems. These two major landscape types are in turn made up of 14 smaller landscape character units. These are defined according to common physical factors such as elevation, contour, geology, vegetation, hydrological features and land-use patterning. Each landscape character area is examined individually and also assessed in its wider landscape context.

The landscape assessment also identifies a number of key locations which define Waimauku’s landscape boundaries related to both its visual and physical context. These key locations suggest transitional boundaries or gateways to Waimauku.

The landscape assessment introduces Landscape Structure Zones, within which a number of the landscape character areas are identified that could accommodate future urban and lower density rural/residential/clustered development, through carefully managed landscape change. Areas where such future growth is less desirable, based on landscape character and quality, are also identified.

For more information on landscape assessment in the study area please refer to the *Waimauku Structure Plan Landscape Assessment*, Boffa Miskell, May 2007.

3.2.3 Landscape Constraints and Opportunities

The Landscape Structure Zones identified in the maps at **Appendix C** have been formulated on the basis of representative character areas in order to refine collective landscape responses to accommodating potential development in the context of Waimauku.

A - Cultivated Lowland Valley Floors

(Awa Lowland Valley/ Waikoukou Valley/ Muriwai Valley)

Future development scenario:

Locations for potential future residential development amongst existing settlement and productive land-use activities are likely to be determined by the relative proximity of sites to Waimauku, through a consolidation of existing settlement patterns.

Landscape management response:

- Protect and manage established amenity vegetation networks alongside native
- vegetation, particularly in relation to watercourses
- Manage development as part of wider integrated catchment planning
- Provide access and recreational amenity links to major watercourses through strategic recreational and open space planning

B - Defining Ridges and Spurs

(School Road Ridge/ Taylor Road Ridge/ Kumeu River Escarpment)

Future development Scenario:

Development to avoid clearance of native vegetation, with incentives for native restoration planting/ enhancement and appropriate set backs from ridgeline roads

Landscape management response:

- Protect and enhance indigenous patterns of native vegetation cover and ecological linkages
- Adopt sustainable management practices in avoiding built development on steep slopes and ridgelines
- Recognise ridgelines as defining natural landmark features

C - Elevated Extensive Agricultural Lands

(Productive plateau/ Open Pastoral Flanks/ Kumeu (Dip Slope)/ Renall's Hill/ Upper Slopes of Waipatukahu and, Wharauora Streams)

Future development scenario:

The introduction of residential development within remote rural agricultural lands requires careful planning to resolve issues including accessibility and isolation from Waimauku, alongside topographical and visual constraints

Landscape management response:

- Adopt sustainable landscape management practices in avoiding built development on steep slopes and ridges
- Protect views from main roads and existing populations through appropriate design

- Manage built development as part of integrated management for the wider catchments

D - Lower Floodplain and Toe Slopes

(Kaipara River Corridor/ Waimauku Alluvial Flats/ Waikoukou Valley/ Kumeu River)

Future development scenario:

Prioritise the protection and enhancement of major watercourses and floodplains, as important recreational and amenity resources to be managed as part of the planned growth of Waimauku, with possible built development of toe slopes

Landscape management response:

- Exclude future built development from the floodplain environment
- Identify and manage major waterways as recreational corridors, incorporating areas of open space and pedestrian linkages between Waimauku and the wider surrounds
- Recognise and protect the important natural and cultural values of major watercourses
- Manage as part of wider integrated catchment planning

E - Upper Stream Valleys

(Wharau Stream/ Waipatukahu Stream)

Future development scenario:

Avoid comprehensive residential development within the immediate stream corridor with the protection of natural characteristics. Associated development of adjacent agricultural landscapes to be carefully managed as part of the overall stream catchment system

Landscape management response:

- Manage stream corridors as part of wider integrated catchment planning
- Manage Wharau Stream as a significant natural feature

Generally speaking, the prominent hill and ridgeline landscape features are recommended for protection or limited carefully managed landscape change. In addition, the flood prone lowlands along the main waterways are recommended for protection, enhancement of their ecological and cultural values and incorporation within open space networks. The more elevated valley and hill toe slopes are identified as areas most able to accommodate landscape changes through well planned and managed future growth.

Whilst the landscape assessment finds that some landscape character areas within the Waimauku study area can better accommodate the type of landscape change that accompanies urbanisation processes, the need to consider landscape values and adopt management strategies that lead to good amenity outcomes in all landscapes is also identified.

3.2.4 Constraints and Opportunities Map

The landscape constraints and opportunities (as depicted by their landscape structure zones) are shown on the maps in **Appendix C**.

3.3 Prime Agricultural Land

3.3.1 Basis

Prime agricultural land has been assessed within the study area as Strategic Policy 2.6.2(2)(ix) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “*Areas of **prime agricultural land** are avoided*”.

3.3.2 Methodology

Prime Agricultural Land is defined in the Auckland Regional Policy Statement as “*land which has a high actual or potential value for sustainable agricultural production. Land may qualify for inclusion in the category of prime agricultural land on the basis of its soils being versatile and easily adapted to a wide range of uses. Other factors of topography, availability of water, climate, and drainage in combination or singly may also contribute to areas which are prime agricultural land. Prime agricultural land is defined as, but not limited to, New Zealand Land Resource Inventory – Land Use Capability Classes I, II and III.*”

The New Zealand Land Resource Inventory Land Use Capability considers the five physical factors most important in land management: rock type, soil type, slope, erosion and vegetation and describes land parcels or map units in these terms. In addition to listing the physical resources of the land, its ability to sustain different land uses is also assessed. This is known as the Land Use Capability (LUC).

In general terms LUC Classes I, II and III are prime land of moderate to high value for primary production. Classes IV and V include land of moderate value for primary production, and Classes VI and below comprise of land of low value for primary production.

The full LUC classes include:

Class I - The best land, flat, free draining, well structured fertile soils suited to sustained intensive horticulture with minimal inputs, e.g., immediately west of the Pukekohe urban area.

Class II - Slight limitations to intensive arable use, e.g., slope and erosion as on the Bombay Hills.

Class III - Moderate limitations to arable use. Commonly alluvial flats with a wetness limitation.

Class IV - Typically rolling hill country too steep and erodible for regular cultivation but suited to intensive pastoral farming, such as dairy farming.

Class V - High producing land which has limitations to make it unsuitable for cropping but which has only slight limitations to pastoral or, in general, forestry use.

Class VI - Mainly strongly rolling to moderately steep hill country. Typically semi-intensive pastoral use, such as sheep and beef farming.

Class VII - Steep hill country and semi consolidated sands, typically with a severe erosion limitation. Limited sustainable productive potential. Typically, conservation areas.

Class VIII - Steep coastal cliffs and foredunes. Protection areas.

Note: At a scale of 1:50,000 the LUC only allows indicative planning. It provides a tool for defining boundaries in principle. For decisions at the scale of individual property, more detailed survey using this New Zealand Land Resource Inventory methodology would need to be undertaken.

3.3.3 Prime Agricultural Land Constraints and Opportunities

The areas of prime agricultural land in the study area cover the Waimauku township* itself and most of the land to the east towards Huapai. The floodplain area of the Kaipara River is also included, as is an area in the Muriwai Valley and the productive plateau to the south west of the township.

These areas are to be avoided where possible, although as stated above, the LUC is a tool for defining boundaries in principle, rather than detail, and more detailed assessment may be necessary if defining boundaries becomes critical.

*The fact that some prime agricultural areas are already urbanised does not necessarily change their LUC class because this is assessed as though the land were in agricultural use. It does, however make LUC a somewhat less relevant measure of the land, since it is then committed to a long-term non-agricultural use with possible extensive engineering works that will alter the intrinsic nature of the land.

3.1.4 Constraints and Opportunities Map

The prime agricultural land constraints and opportunities are shown on the maps in **Appendix D**.

3.4 Natural Heritage and Features

3.4.1 Basis

Natural heritage and features have been assessed within the study area as Strategic Policy 2.6.2(2)(ix) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “*Areas with **significant environmental..values** and areas with **high natural character**, including areas identified in Appendix B are avoided*”.

3.4.2 Methodology

The natural heritage and features constraints were found by using:

- Significant Natural Areas
- Bush Lots
- Riparian Margins

Significant Natural Areas

Significant Natural Areas (SNAs) are referred to in *Chapter 6 – Highly Valued Natural Resources* in the Proposed Rodney District Plan 2000.

Highly Valued Natural Resources have been defined in the Rodney context by statutory considerations, such as the RMA itself, Auckland Regional Council documents, Department of Conservation, Conservation Management Strategy and by the local community. In keeping with the RMA, specific Highly Valued Natural Resources have been identified following an extensive research process undertaken by the Council including SNAs. These Highly Valued Natural Resources represent the “best” in the District.

SNAs are areas of native vegetation and habitats for native animals and are central to the natural environment of the District. Comprising indigenous forest, scrubland and wetlands, inland and coastal waterways, the District’s native vegetation and habitats of native animals tend to be of the highest value where:

- (a) Natural habitats have not been modified.
- (b) Natural habitats are extensive, have a natural diversity of native species, and are viable in the long term.
- (c) Rare species of plants and animals are present.
- (d) A succession of different ecotones and habitats exist.
- (e) Vegetation is representative of vegetation naturally occurring in the District.
- (f) Areas have a diversity of plants and animals.

- (g) Areas are relatively undisturbed by weed species, animals and pests and human activities.

These areas are extremely important for maintaining the biodiversity of the plants and animals within the District, because of their relative intactness and stability and therefore their resilience to human impacts. They act as a gene pool for species and their diversity.

The Council has undertaken a survey of vegetation and wildlife habitats to identify those that are of high ecological value. The survey was based on a number of documents including the:

- Auckland Regional Policy Statement.
- Proposed Auckland Regional Plan: Coastal.
- Conservation Management Strategy for Auckland Conservancy 1993-2003 (Department of Conservation).
- Survey Report for the Protected Natural Areas Programme for the Rodney Ecological District and the Waitakere Ecological District.
- Southern Rodney and Northern Rodney District Development Strategy.
- Sites of Special Wildlife Interest Inventory (SSWI).
- Wetland and Ecological Resource Inventory (WERI).

Areas listed in the above documents were physically surveyed. Additionally, other areas not previously included were surveyed to ensure that a comprehensive list of sites was identified.

Each site was then ranked (i.e. outstanding, high, moderate-high, moderate or potential) in terms of its ecological values, according to recognised criteria. Sites ranked as outstanding, high, moderate-high or moderate are regarded as highly valued sites and have been called SNAs.

Areas identified as SNA on the planning maps have been identified and ranked based on the Rodney Ecological District Protected Natural Areas Programme (PNA report), completed in 1984. This study used the information compiled by the SSWI surveys in 1977 – 1981 to identify priority fauna habitat sites.

In addition to this information a new survey was undertaken in 1998 which resurveyed habitat sites identified by the SSWI and identified some new sites (*The Assessment of Highly Valued Vegetation and Habitats in the Rodney District, Part I: Methodology and Results Summary for Rodney, Waitakere and Tamaki Ecological Districts*, Julian, Davis and Bellingham, June 2000).

The methodology stated in the resurvey that was undertaken states that “172 different native fauna habitat sites were identified during this survey (1998) in the Rodney Ecological District”. From this identification sites were selected for specific field survey.

Many of the areas of highly valued vegetation and wildlife habitats are in public ownership, either with the Department of Conservation, the Auckland Regional Council or the Royal Forest and Bird Protection Society. However, many areas on private land have been covenanted with the District Council or the QEII Trust. Many private landowners have fenced off these and other areas and have undertaken pest management, with or without covenanting. This reflects the value landowners place on these areas.

SNAs represent the “best” in the District but this does not mean that at a local level areas of vegetation or habitat areas are not significant. During the development of options the impacts on smaller, more local areas of vegetation and habitat will be assessed.

Bush Lots

Bush lots are areas of bush or wetland that have been covenanted in a subdivision process. They are therefore protected and need to be avoided in any future development.

Riparian Margins

A riparian margin is the strip of land that runs alongside a waterway. Riparian margins protect a waterway from pollution and/or sediment, usually by fencing and planting trees and shrubs, or by managing a grass sward. Riparian protection will have the greatest impact on smaller waterways, due to a smaller volume of water in relation to the amount of pollutants. Often improved water quality in large lowland rivers is a result of good riparian management in the many small streams in the upper catchments.

The benefits of riparian margins in terms of natural heritage are:

- Improvement in water quality
- Stream bank protection and stabilisation
- Nutrient filtration
- Wildlife and stream habitat
- Improvement of the stream landscape, amenity and recreational values

A 10m riparian margin (on each side of a waterway) has been included on the maps as an area of constraint for any future development.

3.4.3 Natural Heritage and features Constraints and Opportunities

The SNA areas within the study area are mostly found along the Taylor Road ridge, School/Fletcher/Hamilton Road ridges, to the north and south of the existing township. Bush lots are scattered throughout the study area, with a concentration in the southern and northern parts. The riparian margins around streams spread into all parts of the study area.

The SNA and bush lot areas should be avoided in terms of any future urban development. There are opportunities for strengthening ecological corridors linkages

running from north to south in the study area. There are also opportunities for the implementation of riparian margins to the Kaipara River and most of the lower order streams.

3.4.4 Constraints and Opportunities Map

The natural heritage and features constraints and opportunities are shown on the maps in **Appendix E**.

3.5 Hazards - Flooding

3.5.1 Basis

Flooding has been assessed within the study area as Strategic Policy 2.6.2(2)(v) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “*Areas prone to the impact of **natural hazards such as flooding** or land instability and areas which if urbanised are likely to induce flooding or instability elsewhere, are avoided*”.

3.5.2 Methodology

The flood plain was based on a hydraulic model developed for the Kumeu/ Kaipara catchment by DHI Water and Environment (2007) for Rodney District Council.

A 10m buffer around all the streams in the study area was also shown as riparian margins aid controlling flooding hazards through:

- protection of overland flow paths and the flood plain
- development setbacks
- vegetation to mitigate potential erosion
- filtration and contaminant removal from overland flow

3.5.3 Flooding Constraints and Opportunities

The Waimauku area was so named as according to tangata whenua history when the stream was in flood the land was drowned and only the tops of the cabbage trees were visible, appearing like small ferns above the high waters. “Waimauku” - wai (stream/water) and mauku (varieties of small ferns - *Asplenium bulbiferum*, and *Hymenophyllum spp.*). As the wai (water) receded the mauku (fern) symbolized the existence of the floodplain.

The floodplain areas in the study area follow the Kaipara River through the middle of the study area. There are areas of the existing Waimauku township that are in the identified floodplain. In terms of Strategic Policy 2.6.2(2)(v) mentioned above, these areas would not be urbanised if a new town was being developed there today. The riparian margins around streams spread into all parts of the study area.

The areas identified as being within the floodplain should be avoided in terms of any future urban development. It is considered that it is not sustainable to have buildings located within flood prone areas due to the economic, health and safety implications arising from flood events. Buildings which experience flooding lose value and become devalued economically. In some cases these buildings are completely abandoned. There is also health and safety concerns with the possibility loss of life or dwellings being contaminated with wastewater or other contaminates being in the flood waters.

There are also opportunities for the implementation of riparian margins to the Kaipara River and most of the lower order streams.

For more information on flooding in the study area please refer to the *Kumeu/Kaipara Integrated Catchment Management Plan*, Rodney District Council, May 2007.

3.5.4 Constraints and Opportunities Map

The flooding constraints and opportunities are shown on the maps in **Appendix F**.

3.6 Hazards – Land Stability

3.6.1 Basis

Land stability has been assessed within the study area as Strategic Policy 2.6.2(2)(v) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “*Areas prone to the impact of **natural hazards such as flooding or land instability** and areas which if urbanised are likely to induce flooding or instability elsewhere, are avoided*”.

3.6.2 Methodology

In performing the land stability study, the following methodology was adopted in development of the land stability constraints map.

- Review of stereo pair aerial photographs to assess the general extent of areas that exhibit obvious topographic evidence of slope instability.
- Desk top assessment of the slope angle at which instability becomes clearly apparent for the various geological materials beneath the subject area.
- Review of existing information held in RILEY consultants files and published geological information.
- Limited on site mapping of geological and geomorphic features within the structure plan area by engineering geologists from this office.

Information gathered from the above methods, in combination with GIS calculated slope gradients from contour data, has been used in development of the land stability constraints map.

3.6.3 Land Stability Constraints and Opportunities

From the land stability study undertaken, two broad zones have been developed defining inferred geotechnical risk in the Waimauku Structure Plan area.

The low stability constraints zone is likely to require minimal geotechnical input with respect to stability for the future urban and rural-residential development. Dependant on specific proposals, earthworks required could be minimal along with remedial or stability improvement measures.

The moderate to high stability constraints area will require more detailed geotechnical involvement, and many areas may require significant earthworks and/or stabilising measures. Some areas of existing instability may not be suitable for any development. Furthermore, it should be noted that it is likely some areas exist within this moderate to high constraints zone, that may only require limited earthworks or stability improvement for small scale development.

Approximately 32% of the study area is zoned as low stability constraints.

In general, large areas of the study site are inferred to have been affected by past instability, even on relatively gentle slopes. Thus a significant portion of the site has been zoned as having moderate to high stability constraints.

It is considered that with a more in-depth assessment of the area, further differentiation of the zones would be possible, particularly the moderate to high stability constraints zone. This would require a more detailed assessment, and likely to include, detailed site walkovers, geological mapping and localised subsurface investigations.

For more information on land stability in the study area please refer to the *Land Stability Constraints Zoning*, Riley Consultants, May 2007.

3.6.4 Constraints and Opportunities Map

The land stability constraints and opportunities are shown on the maps in **Appendix G**.

3.7 Hazards – Fault Lines

3.7.1 Basis

Fault lines have been assessed within the study area as Strategic Policy 2.6.2(2)(v) on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) states that limited extensions may be made to rural settlements from time to time, but only where “*Areas prone to the impact of **natural hazards** such as flooding or land instability and areas which if urbanised are likely to induce flooding or instability elsewhere, are avoided*”.

3.7.2 Methodology

The fault line constraints were found by using the following resources:

- The Geological maps 1:50,000 - Helensville and Whangaparaoa Q10 and R10, Schofield, J.C., 1989
- The Geological maps 1:50,000 - Waitakere Q11BD, Hayward, B.W., 1983
- Planning for Development of Land on or Close to Active Faults, Ministry for the Environment, 2003
- Planning for Development of Land on or Close to Active Faults; A study of the adoption and use of the Active Fault Guidelines, Geological and Nuclear Sciences Limited, 2005.
- Staff at the Institute of Geological and Nuclear Sciences Limited (GNS)

3.7.3 Fault Lines Constraints and Opportunities

There are no geologically active faults in the study area. An active fault is a fault that has ruptured repeatedly in the past, and whose history indicates that it is likely to rupture again. An active fault creates a fault hazard risk.

New Zealand geological maps use a distinctive colour for faults that have moved in the last 120,000 years. This is generally regarded as the upper limit for a fault to be classified as active. There are only two active faults identified in the Auckland region, being the Wairau North and the Drury Fault near the Hunuwas.

There are some faults located in the vicinity. However, there is little or no surface expression of these as they are more than 2 million years old and are not considered to be active. This part of the North Island is also considered to be at a low risk of seismic activity.

The guideline “*Planning for Development of Land on or Close to Active Faults*” produced by the Ministry for the Environment and the Institute of Geological and Nuclear Sciences Limited only requires hazard avoidance zones where a fault is identified as being active.

Therefore the faults identified in the vicinity are not thought to be a constraint as they are not active.

3.7.4 Constraints and Opportunities Map

There are no fault lines constraints and opportunities to map.

3.8 Hazards – Potentially Contaminated Land

3.8.1 Basis

The need to identify and track contaminated sites (and be aware of them for future planning) is fundamental to the protection of public health and the environment from the effects of such contamination.

The Resource Management Act 1991 places a duty on Rodney District Council to gather information on the environmental effects of land uses. Rodney District Council holds an inventory of potentially contaminated sites which has been prepared under this duty.

3.8.2 Methodology

A contaminated site can be defined as *“A site where the quality of soil, ground water or surface water resources has been compromised as a result of the land use practices (predominantly from the manufacture, storage, use and disposal of chemicals and hazardous substances) on that site.”*

Rodney District Council holds an inventory of potentially contaminated sites. This has been prepared by:

- Identifying land uses within the District which have the potential to contaminate the environment. The Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites published in January 1992 by the Australian and New Zealand Environment and Conservation Council (ANZECC) and National Health and Medical Research Council (NH & MRC), were used as the basis for identifying these land uses.
- Site visits were then made to determine whether there were signs of contamination in surrounding soil or waterways and whether the activity was still occurring. Discoloured discharges, vegetation die-back, and obnoxious smells were taken as possible signs of contamination and have been recorded in the inventory where relevant.

It is important to note that this inventory is only an inventory of potentially contaminated sites and inclusion of a site in this inventory does not necessarily mean it is contaminated. Without sampling and subsequent analysis from a given site, there is no sure way of determining whether a site is contaminated or not. Only in some cases have sites recorded in this inventory been sampled and analysed to confirm contamination. The inventory notes where the Council is aware that this has occurred.

3.8.3 Potentially Contaminated Land Constraints and Opportunities

Table 2 below identifies the potentially contaminated sites in the Waimauku Structure Plan study area. The actual areas on each site that are potentially contaminated are not known so the entire property is identified as a matter of precaution.

Table 2:

Potentially Contaminated Sites in the Waimauku Structure Plan Study Area.

No.	OCCUPIER AND STREET	PRESENT LAND USE	CONTAMINANT
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	ADDRESS		CATEGORY
121	134 McPikes Road REWETI	Septic tank waste and industrial waste disposal site	Septic tank waste/industrial sludge wastes
17	State Highway 16 REWITI	Landfill - disused	Private landfill, dumping of particle board.
18	State Highway 16 WAIMAUKU	Landfill - disused	Building waste and household refuse
66	Cnr Station Rd and State Highway 16 WAIMAUKU 11/94	Under-ground storage tanks	Petrol/diesel
86	State Highway 16 WAIMAUKU	Under-ground storage tanks	Petrol/diesel

All sites identified are discrete areas and should be avoided in terms of any future urban development. It is noted that some sites may be able to be managed through remedying by cleaning the site of contaminants.

3.8.4 Constraints and Opportunities Map

The potentially contaminated land constraints and opportunities are shown on the maps in **Appendix H**.

3.9 Economic

3.9.1 Basis

In assessing the constraints and opportunities for the future of the Waimauku study area it is important to consider the main drivers of the economy and plan for the future economic sustainability of the area.

Sustainable management is the purpose of the Resource Management Act 1991 and the term is defined in Section 5 as “*managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, **economic**, and cultural wellbeing and for their health and safety...*”.

3.9.2 Methodology

There have been two recent significant reports relating to the economy of the western area (which includes Waimauku) by Speer and Starr which have been used in finding some of the economic constraints and opportunities for the study area.

These reports are the *Supply of New Business Land in the Northern and Western Sectors* (November 2005) and *Economic Development Trends in the Rodney District Western Sector – A project to assist with achieving the district strategy Vision Rodney in an important growth area* (April 2006).

3.9.3 Economic Constraints and Opportunities

The Waimauku community and rural area are described as:

- about 7kms to the northwest of Kumeu, located along SH16
- some vineyards, although most further south
- also concentrations of glasshouse production units
- some market gardening and orcharding continues
- pastoral agricultural land runs into the large Woodhill Forest estate
- very localised retail business centre; Kumeu is the main focal point (and beyond that Westgate)
- important road junction to Muriwai Beach
- ongoing population growth is expected as part of the greater Kumeu catchment

In the functional hierarchy of commercial centres (Dairy, Community Centre, Town Centre, Regional Centre) Waimauku is classified as a Community Centre. It is noted that Waimauku is about to get a new extended shopping centre in the ‘Triangle development’ which will add 14 new shops and a small supermarket to the centre.

The key themes and recommendations to emerge from these economic reports as relating to the Waimauku study area are:

- No major area of business land is needed in Waimauku:
There is no vacant business land available for future development. However, the future needs for general retail/commercial space directly in Waimauku are likely to be limited to businesses responding to very local residential growth. These

retail/commercial activities will continue to have a high level focus on local goods and services and very little in terms of specialist retailing or large-format retailing (left to other regional centres). No major area of business land is needed in Waimauku, only that required to serve local needs with population growth (as business interests strongly favour a Westgate position).

Even the future business capacity in and around Kumeu is limited to being predominately a local business area at a scale that is in keeping with its position within a small township and associated trade catchment. Major business development interests will be better served in the Westgate area which can also fill the role of 'local employment zone' for residents living in parts of the Western Rodney area as well as around Waitakere City.

In the Rodney District overall, Silverdale is the position of greatest strategic value for new businesses.

- Tourism/recreation is a growing industry and has good fundamentals to build on: Woodhill Forest and Muriwai Beach are significant natural features used for recreation that generate passing traffic through Waimauku. Other tourist type businesses (e.g. Bees-on-line) are also emerging. The area has historical roots in a 'rustic NZ lifestyle' and has an attractive countryside-forest-beach environment. The proximity to greater Auckland means there is a large 'tourist market'.
- Tourist accommodation is needed (mid-range): There are several quality bed and breakfast type accommodation in the vicinity but these are small and expensive. What is required is a reasonable sized 'middle market' operation, suitable for business visitors, for function attendees to stay overnight, and for families on holiday in the general area.
- Lifestyle block threat: There is a threat to genuine viticulture and agriculture activities from lifestyle block subdivision. Competition from lifestyle blocks negatively impacts not only in terms of land price competition but also in terms of reverse sensitivity issues and conflicts with everyday agricultural practices.

There is also a loss of economic value to associated industries that rely on agricultural land/activities to provide an amenity of open countryside as a reason for tourists to visit the area.

- Infrastructure: A lack of infrastructure (water, wastewater, stormwater) is a constraint to business/industry development. The rail connection has yet to make economic sense for businesses to use.

For more information please refer to *Supply of New Business Land in the Northern and Western Sectors*, Speer and Starr, November 2005 and *Economic Development Trends in the Rodney District Western Sector – A project to assist with achieving the district strategy Vision Rodney in an important growth area*, Speer and Starr, April 2006.

3.9.4 Constraints and Opportunities Map

There are no constraints and opportunities suitable to be spatially depicted on a map.

3.10 Infrastructure

3.10.1 Basis

Infrastructure has been assessed within the study area as the Strategic Policies on Urban Containment in the Auckland Regional Policy Statement (Plan Change 6) state that limited extensions may be made to rural settlements from time to time, but only where:

- 2.6.2(2)(iii) *“It can be demonstrated that infrastructure and services, including utility services, roading and public transportation facilities and services, and community and health services, such as schools, libraries, public open spaces can be provided”.*
- 2.6.2(2)(iv) *“The extension...
a. can be efficiently connected to existing physical infrastructure or serviced by new infrastructure;
b. will not adversely affect existing rural and coastal settlements.”*

3.10.2 Waste Water Constraints and Opportunities

Waimauku is currently serviced by individual on-site treatment and disposal systems, and a number of privately owned systems serving a cluster of houses. When on-site and cluster systems are used in urban settings, cumulative effects (effects over time of many such systems together) are not well understood, and Council considers that the level of service reasonably achieved from these systems is not appropriate for urban style development.

A significant proportion of these private on-site and cluster systems in Waimauku have been constructed within the last ten years. These systems rely on soakage for effluent disposal. Most soil types in the area are moderate to slow draining and are considered to be moderate to severe in terms of limitations for on-site wastewater disposal. There have been issues with the inability of the disposal areas to accommodate the volumes of effluent discharged and contamination of stormwater and nearby watercourses with septic effluent during wet conditions. Waimauku thus experiences public health and environmental problems related to on-site wastewater disposal.

In 2005 Council purchased 80 hectares of land at 139 Tapu Road, Huapai for the purpose of constructing a ‘standalone’ wastewater treatment plant and disposal field to service both the existing communities and growth in Kumeu, Huapai, Waimauku and Riverhead.

It was anticipated that a subsidy of up to 50% would be available from the Central Government Sanitary Works Subsidy Scheme for existing households, and that this would make the project affordable for existing residents. In March 2007 Council was informed that demand for the fund had exceeded expectation, and remaining funds would be directed at communities with the greatest need, as measured by the Deprivation Index. Communities such as Kumeu, Huapai, Waimauku and Riverhead, with relatively low Deprivation Indices, are unlikely to receive the funding.

Council is now concerned about the affordability of the project to existing households in the area, and is investigating three ways forward:

- The option of a connection to the Water Care regional sewerage system is being revisited.
- Investigating alternative means of funding the standalone treatment plant and disposal system at Tapu Road. The scheme is being designed to serve both the existing community and planned development with an emphasis on initially serving the existing properties. However, there is a significant up-front cost to build key elements of the scheme and it may be better to align this more closely with development and connect the existing properties over a period of time. Initial meetings have already been held with some developers, with other meetings planned in the near future.
- Reviewing the impacts of remaining with the status quo. This involves studies to determine the impact private individual and cluster systems have, to assess cumulative effects and determine under what circumstances private on-site wastewater treatment and disposal is sustainable.

An additional option would see the standalone plant at Tapu Road go ahead without Waimauku, as studies to date indicate that the cost of reticulation to connect Waimauku is higher per dwelling (or future dwelling) connected than the other communities.

A decision on the way forward in terms of wastewater is anticipated around the end of the year following a separate consultation process.

3.10.3 Drinking Water Constraints and Opportunities

At present there is no water supply to the Waimauku area with all properties relying on private supplies such as rainwater tanks and bores. The nearest filling station for water carriers is located in Waitakere City.

Fire fighting water is taken from any available local source including ponds, rainwater tanks and the Kaipara. There is no industrial development in Waimauku so the fire risk is low, but residential properties are still at risk unless they have sprinkler systems installed.

There are currently no plans to provide a public water supply to Waimauku. A public supply is being considered for Kumeu-Huapai and Riverhead comprising a supply from the Water Care network in Waitakere City. However, there is no intention to extend this to Waimauku and the water mains will be sized on the basis that the supply is only to the urban areas of Kumeu-Huapai and Riverhead.

Options for Waimauku could include:

- Continue with private water supplies including rainwater tanks and bores, but encourage installation of sprinkler systems to reduce fire risk. Rainwater tanks provide a moderate-low level of service (i.e. lower water quality and vulnerable to running out of water in dry periods), but they are suitable for isolated communities. Groundwater in the area is generally of good quality but is hard to find and drilling bores can be expensive.

- For developments, it might be possible to provide a private water treatment system (e.g. utilising stormwater or, possibly, a take from the Kaipara River, but obtaining a take consent could be difficult). In this approach, it would be sensible to incorporate wastewater recycling for garden watering and/or toilet flushing, and water saving devices to reduce the water demand.
- Water Care have plans to build a new storage dam at Ararimu in Riverhead Forest. This could provide a reticulated supply to the Kumeu area including Waimauku, but the project would be well into the future, if it proceeds at all.

3.10.4 Stormwater Constraints and Opportunities

As illustrated in the flooding constraints in Section 3.5 of this report, the Waimauku area (particularly around the township) has issues with flooding. The stormwater constraints are particular to three areas in and around the Waimauku township that are related to flooding.

The first area is the catchment of Cloverfields Drive and Wintour Road. This area drains into the Kaipara River through culverts under Cloverfields Drive, SH16 and the railway line. The area already experiences flooding and access restrictions when runoff cannot discharge due to high main river levels. This area is considered to have constraints to development as there are significant (\$1m+) costs associated with any upgrading of the culverts, there is existing down stream flooding risks, and larger than usual stormwater ponds would only partially mitigate flood issues.

The other areas of stormwater constraint are on the south slope side of Renall's hill and the catchment in the vicinity of Amber Place south towards Muriwai. These areas are considered to have constraints to development as they flow into flood prone areas that are already developed into relatively small sections, meaning there is a risk of increased stream flooding should any future development take place in these catchments. These areas would need larger than usual stormwater ponds to mitigate this.

These areas mentioned above will require careful consideration in terms of any future urban development and the implications for stormwater.

For more information on stormwater in the study area please refer to the *Kumeu/Kaipara Integrated Catchment Management Plan*, Rodney District Council, May 2007.

3.10.5 Open Space Constraints and Opportunities

The Council, Department of Conservation, and Forest and Bird own a number of open space reserves within the study area. **Table 3** below summarises the main areas.

The open space outside the township is either esplanade reserve or bush conservation areas. The largest of these is the Colin Kerr-Taylor Reserve.

The open space within the township is mostly neighbourhood reserves and walkways linking cul-de-sac streets. It is noted that these reserves are predominately on the eastern side of Muriwai Road and there is a need for a neighbourhood reserve on the western side of Muriwai Road, south of SH16. The Waimauku School fields (on the western side) informally provides an area of open space, but this is only outside school hours.

Glasgow Park is the main open space within the township and contains the Waimauku Pony Club. The Council's draft Bridleways Strategy identifies a possible bridleway route in the Taha Rd area.

Council has recently acquired a large block of land to be used for reserve adjoining Glasgow Reserve. The future uses of this reserve will be established through a reserve management plan process.

The triangle shopping centre development currently under construction provides for a village green adjacent to the shops.

There are no major areas of sports fields in the study area, although the Huapai Domain to the east has a quantity of sports fields. There is an identified need for active recreation areas within the Huapai area (4 ha by 2011 and 7 ha beyond 2011).

There are no regional parks within the study area, although the Muriwai Regional Park is located just to the south east, adjacent to the Muriwai village. Privately owned open space in proximity to the study area includes forestry land at Woodhill and Riverhead.

Table 3: Open Space

No.	Name	Approx. Area (Ha.)	Purpose	Ownership
Various	Township walkway reserves	1.1	Neighbourhood reserve	Rodney District Council
Various	Esplanade Reserve	7.7	Esplanade Reserve (water access)	Rodney District Council
1	Glasgow Park	3.7	Neighbourhood reserve/Pony club	Department of Conservation (managed by Rodney District Council)
2	Glasgow Park extension	11.4	To be determined through a management plan process	Rodney District Council
3	Waimauku Primary School Fields	1.6	Informal neighbourhood reserve outside school hours	Ministry of Education
4	Colin Kerr-Taylor Reserve	12.9	Bush Conservation Area	Forest and Bird Society
5	Mildred Amy Kerr-Taylor Reserve	6.0	Bush Conservation Area	Rodney District Council
6	Village Green	0.1	Neighbourhood Reserve	Private
7	Tennis Club and Bowls club	1.7	Recreation facilities	Private
8	Waimauku Hall	0.2	Community Hall	Rodney District Council

3.10.6 Transportation Constraints and Opportunities

Any significant future development of Waimauku will result in the number of trips generated in the area increasing by a factor of 10 to 20 times the current level. Any development of this scale will require its own significant transport network, comprising roads, walkways, and probably cycleways and infrastructure for public transport. It will also need to be integrated with the existing local road network and State Highway network.

Demonstrating integration of land-use and the proposed transport system would be a requirement of any Plan Variation to enable this type of development. Some specific factors which will make this challenging for Waimauku are:

- The effect that trips generated by any new development will have on the existing community.
- The interaction of State Highway 16 (SH16) with the existing local roads and community, which has already been identified by the community and the Council as worthy of investigation for improvement, regardless of any future major growth. (Issues include real and/or perceived hazards to vehicles and pedestrians and resulting impairment of access and mobility within the village.)
- The effect that trips generated by any new development will have on the operation of SH16.
- The transition from a predominantly rural environment to an urban environment where residents have different lifestyles and expectations of provision of infrastructure and services.

Any future population increase could provide some potential for increased patronage of public transport*, and services could be improved if demand were sufficient.

**Note (Potential for Increased Use of Rail):* The Auckland Regional Transport Authority's (ARTA) Rail Development Plan indicates that by 2016 passenger rail services could be extended to Kumeu (2 trains per hour), but no further (the extent of double-tracking by then would be Swanson). The plan also indicates that by 2030, services could extend to Helensville if it becomes a "high-density population centre". It may be difficult to justify provision of rail services over buses from the perspectives of both overall cost (including infrastructure) and travel time.

It is recommended that as the proposed Structure Plan is developed, an Integrated Transport Assessment be developed concurrently. This is to ensure that the Structure Plan and any subsequent Plan Variation meet the requirements of ARTA's Integrated Transport Assessment guidelines¹, and also provide an interface to the State Highway system which comply with Transit New Zealand and Rodney District Council design standards.

For more information on transportation constraints and opportunities please refer to *Waimauku Structure Plan – "Transport Constraints and Opportunities"*, Projenz Limited, May 2007.

3.10.7 School Constraints and Opportunities

The Ministry of Education (MoE) is currently looking to purchase and designate a site for a new primary school in the study area. This school would serve the Muriwai and Waimauku townships as well as the surrounding rural area (along with the existing Waimauku School). The new school would take the pressure off Waimauku Primary School which is at capacity with its current roll of 638.

The exact site that the MoE is looking at is not yet public information, although its general area is in the southern portion of the study area (as shown in **Appendix I**). This follows the MoE's earlier attempts to establish a school closer to the township that met with community opposition.

The MoE is yet to formally lodge a Notice of Requirement with the Rodney District Council to designate the new school site. Once a Notice of Requirement is lodged the public will have a chance to make submissions. The Council will then make recommendations to the MoE. As the requiring authority, the MoE can accept or reject some or all of the Council's recommendations. The decision of the MoE is able to be appealed to the Environment Court by the Council or submitters.

The MoE is currently undertaking a schools strategy for the North West/Waitakere area. This will involve a public consultation process to help provide the ministry with options on how best to provide the schooling network into the future. Rodney is working closely with the Ministry of Education to provide a schooling infrastructure that will best serve identified growth nodes.

For more information on schooling constraints and opportunities please refer to the Ministry of Education.

3.10.8 Other Infrastructure Constraints and Opportunities

The Proposed Rodney District Plan 2000 identifies some areas of land designated by requiring authorities for infrastructure use. There are also other infrastructure facilities that are not designated, but are nonetheless worthy of noting in preparing opportunities and constraints maps. This infrastructure is identified in **Table 4** below.

Table 4: Infrastructure

No.	Proposed District Plan Designation No.	Name	Authority
1	613	Substation	United Networks New Zealand Ltd
2	821	Waimauku Exchange	Telecom New Zealand Ltd
3	N/a	International Cables	Telecom New Zealand Ltd
4	N/a (Notice of Requirement lodged)	Petroleum Pipeline	New Zealand Refinery Company
5	N/a	Gas Pipeline	Vector

	(Notice of Requirement to be lodged in near future)		
6	N/a	Pump Station	New Zealand Refinery Company
7	501	Railway Purposes	Ontrack (New Zealand Railways Corporation)
8	Currently included in map annotation as being designated.	State Highway 16	Transit New Zealand
9	N/a	High Voltage Transmission Lines	Transpower New Zealand Ltd
10	N/a	Cell phone tower	Telecom New Zealand

3.10.9 Constraints and Opportunities Map

The infrastructure constraints and opportunities (all those identified in Section 3.10) are shown on the maps in **Appendix I**.

4. Matters to consider in the development of options

The constraints and opportunities of the land in the study area will be considered in the next stage of the structure plan process, being the development of options. Other matters will also be considered including the feedback from the phase 1 consultation and guiding policy and statutory documents.

4.1 Constraints and Opportunities

The constraints and opportunities research identifies areas that are to be avoided or would require significant mitigation before any development could occur. There are different levels of constraints with some being ‘no-go’ areas and others needing careful management before any future development could occur.

The levels of constraints will be worked through in the development of options stage of the structure plan, with input from the feedback received during the phase 2 consultation. This will involve a synthesis of the different constraints and opportunities layers and balancing these against potential future development options.

There are also constraints and opportunities that will conflict with each other. That is, the areas of constraint in one topic may be an area with no constraints in another (e.g. an area of prime agricultural land may overlap an area considered to have landscape capacity for development). These variances will be managed and balanced through the development of options stage with input from the feedback received during the phase 2 consultation.

4.2 Phase 1 Consultation

The phase 1 consultation process involved a newsletter drop, open days, a community group meeting, and a project website. Feedback was sought through a feedback form included in the newsletter. Full details on the phase 1 consultation can be found in the report *Phase 1 Consultation Analysis of Feedback Forms*, Rodney District Council, December 2006 which is on the project website www.rodney.govt.nz/waimauku.

The strongest theme to emerge from respondent’s answers to how they saw Waimauku in the future (next 20 years) was “Green rural surrounds”. The “Rural village/township” theme was also strongly represented, as was the theme “Retain sense of rural community and country/relaxed atmosphere”.

These three main themes correlate with the three main themes in the answers to the things you like about Waimauku. The overwhelming responses to this question were words to the effect of “Rural character/green space and bush surroundings/fresh air” as being the main thing that respondents liked about Waimauku. Strong responses were also given for the themes of “The people - community spirit/identity” and “Village nature”.

The feedback gave a clear direction that the aspirations for the future of Waimauku were:

- Green rural surrounds

- A rural village
- A country community identity and spirit

The strongest responses for things respondents would like to change about Waimauku were related to transport and were “SH16/Muriwai Rd intersection”, “Improve public transport (train/bus)” and “SH16 (not specifically the intersection)”.

The feedback also provided areas for the Council to investigate in the constraints and opportunities phase and specific things within these areas. General comments were also received on the project.

4.3 Guiding Policy and Statutory Documents

The Waimauku Structure Plan is a non-statutory document but it takes into account other National, Regional, and District documents (both statutory and non-statutory).

Documents that influence the Structure Plan are many and varied but notably include the Auckland Regional Policy Statement, Auckland Regional Growth Strategy, and Vision Rodney which set out broad policies and strategic directions for any future growth. The next stage of the structure plan process in developing options will need to align with these documents.

Auckland Regional Growth Strategy (1999)

The Auckland Regional Growth Strategy provides a vision for what Auckland could be like in 50 years time with a population of 2 million through:

- A compact urban form
- Limited expansion into greenfield areas outside of the current Metropolitan Urban Limits
- Protection of the coast and surrounding natural environment.

Auckland Regional Policy Statement (1999)

The Auckland Regional Policy Statement (ARPS) is a statutory document that the District Plan cannot be contrary to. In terms of any future growth for Waimauku, the ARPS contains some specific strategic policies on urban containment in section 2.6.2(2) (as amended by Proposed Plan Change 6, hearing report ARC 3 – September 2006) which state that limited extensions may be made to the limits of rural settlements from time to time but only where:

- The strategic direction of containment and intensification is not compromised. In particular the extension does not compromise intensification within the areas identified in Schedules 1A and 1B;*
- Areas with significant environmental, heritage or landscape values and areas with high natural character, including areas identified in Appendix B are avoided;*
- It can be demonstrated that infrastructure and services, including utility services, roading and public transportation facilities and services, and community and health services, such as schools, libraries, public open spaces can be provided;*

- iv. *The extension is contiguous with existing urban development and:

 - a. *can be efficiently connected to existing physical infrastructure or serviced by new infrastructure;*
 - b. *will not adversely affect existing rural and coastal settlements.**
 - v. *Areas prone to the impact of natural hazards such as flooding or land instability and areas which if urbanised are likely to induce flooding or instability elsewhere, are avoided;*
 - vi. *The new boundary provides a clear differentiation between urban and rural areas including through the use of water catchment boundaries and or visual catchment boundaries in order to reduce pressure for future urban expansion;*
 - vii. *In deciding the location of any future extension consideration will be given to whether the extension makes use of, or brings development closer to, boundaries that provide a defensible long term limit to urban development;*
 - viii. *Conflicts or incompatibilities between adjoining land uses are avoided;*
 - ix. *Areas of prime agricultural land are avoided; and*
 - x. *It is demonstrated that there is insufficient capacity including both vacant land and redevelopment opportunities, available within the metropolitan urban limits or the limits of rural and coastal settlements to cater for anticipated growth.*
3. ...
4. *Countryside living is subject to constraints as to location, scale, and extent and should be considered alongside urban growth capacity so that urban consolidation policies are not compromised (refer to Strategic Policies – Rural Development Control and methods)*
5. *Any proposal to establish or develop new towns/villages will be considered and assessed against the matters set out in 2.6.2.2.*

Some of these matters have been addressed in the constraints and opportunities research and they all will be considered in the development of options.

Vision Rodney (2003)

Vision Rodney is “a statement of the future that we, the people and communities of Rodney, want for ourselves. And even though we are distinct communities, we share the values and have the outcomes we have stated here as a common goal. It is a future that we choose, want to achieve and together will work towards.”

Vision Rodney has 6 intents:

- We will keep our country look and feel

- We will not let our towns and villages sprawl
- We will maintain our lifestyle and look after the environment
- We will take care of ourselves while working with others
- We will be able to make our living in Rodney District Council
- We will determine the future of our District

4.4 How much growth?

The constraints and opportunities stage has provided information on *where* any future growth should or should not occur, but the question of *how much* growth also needs to be considered.

The development of options will consider a range of growth scenarios from low-growth to high growth. However, it is useful to consider this growth within the framework of the Regional Growth Strategy and the other Western Rodney settlements.

This section does not attempt to develop any options and thus pre-empt the next stage of the process, but rather examine the growth context under which the development of options will be done.

Growth for Kumeu-Huapai-Waimauku

The Regional Growth Strategy (through the Rodney District Development Strategy 1999) identifies that the Kumeu-Huapai-Waimauku area is to accommodate approximately 16,000 by 2051. Rather than 16,000, the Kumeu-Huapai Central Area Plan (2005) states that the Kumeu-Huapai area is to have only 10,000 people by 2051. The future urban zonings identified in the Kumeu-Huapai-Waimauku Structure Plan (and carried into the Proposed District Plan 2000) allow for approximately 10,000 people to 2051. The Kumeu-Huapai Central Area Plan states that the relocation of the additional 6,000 residents should be identified as soon as possible.

Rodney District Council has created an expectation within the Regional Growth Forum and the community at large that it will meet the growth figures in the Regional Growth Strategy. The Regional Growth Strategy has been given further weighting recently by the Local Government Auckland Amendment Act 2004 which requires the Regional Policy Statement (and in turn District Plans) to give effect to the Regional Growth Strategy.

However, it is important to recognise that the Regional Growth Strategy and the Northern and Western Sectors Agreement (2001) accepted that each territorial authority would need to be satisfied that any growth stated in these documents could be accommodated and still meet the tests under the Resource Management Act 1991 to avoid, remedy or mitigate any adverse effects on the environment. The approach allows for flexibility to address local issues, while at the same time ensuring that the vision, outcomes and principles of the Regional Growth Strategy are met.

It should also be noted that the Regional Growth Strategy has not been 'imposed' on Rodney District Council by the Auckland Regional Council (ARC), but rather Rodney

District Council provided figures for growth to the ARC which it considered were attainable to 2051. The Council is responsible for ensuring that growth is managed throughout the District by identifying suitable areas for future growth and not allowing growth to spill into unsuitable areas.

There are a number of options for allocating the 6,000 of growth to 2051 (no option has yet been decided on):

- Allocate the growth, or a portion of it, to Waimauku in the Waimauku Structure Plan process.
- Allocate growth, or a portion of it, to another area as yet unknown.
- Defer a decision on allocating where this growth could occur to post-2028 (beyond the planning horizon of this Waimauku Structure Plan).
- Rodney District Council to look at reconsidering the growth numbers in Kumeu-Huapai-Waimauku in the Regional Growth Strategy review occurring over the next few years.

It must be noted that the 6,000 growth figure is to 2051 and is not required to be met in the 10-20 year timeframe of the Kumeu-Huapai-Waimauku Structure Plan (2018) or the 10-20 year timeframe of the Waimauku Structure Plan (2028) currently being prepared.

Western Rodney Settlement Pattern

The settlements in Western Rodney can be seen as a network of villages and towns with inter-relationships. The populations for each of the Western towns and villages around Waimauku are shown in **Table 5** below.

Table 5: Western Rodney Settlement Pattern - Populations

Name	Population 2006
Taupaki	207
Riverhead	1,350
Kumeu-Huapai	1,401
Waimauku	930
Muriwai	1,077
Woodhill	138
Helensville	2,298
Parakai	954

The future of Waimauku is also to be considered in light of the Western Rodney settlement pattern. An increase in Waimauku's population will change Waimauku's position in the network of Western Rodney towns.

There are advantages and disadvantages to all the different forms of development and positions in the network of settlements. Feedback will be sought on the implications for Waimauku during the next stage when different options are presented to the public.

Appendix A – Process Diagram

Appendix B – Cultural Heritage Maps

Appendix C – Landscape Assessment Maps

Appendix D – Prime Agricultural Land Maps

Appendix E – Natural Heritage and Features Maps

Appendix F – Hazards – Flooding Maps

Appendix G – Hazards – Land Stability Maps

Appendix H – Hazards – Potentially Contaminated Land Maps

Appendix I – Infrastructure Maps