

WATER AND SANITARY SERVICES
ASSESSMENT
2005

SUMMARY

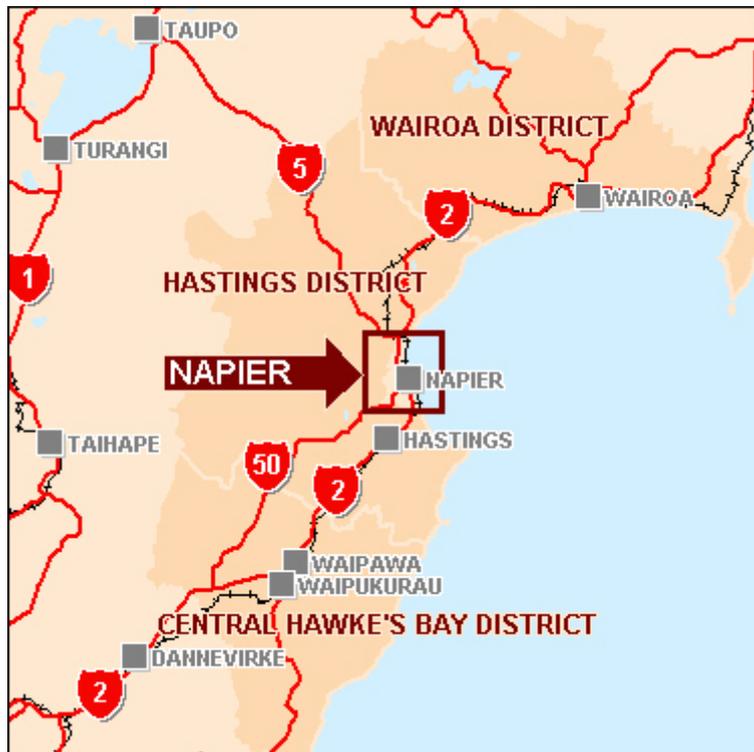


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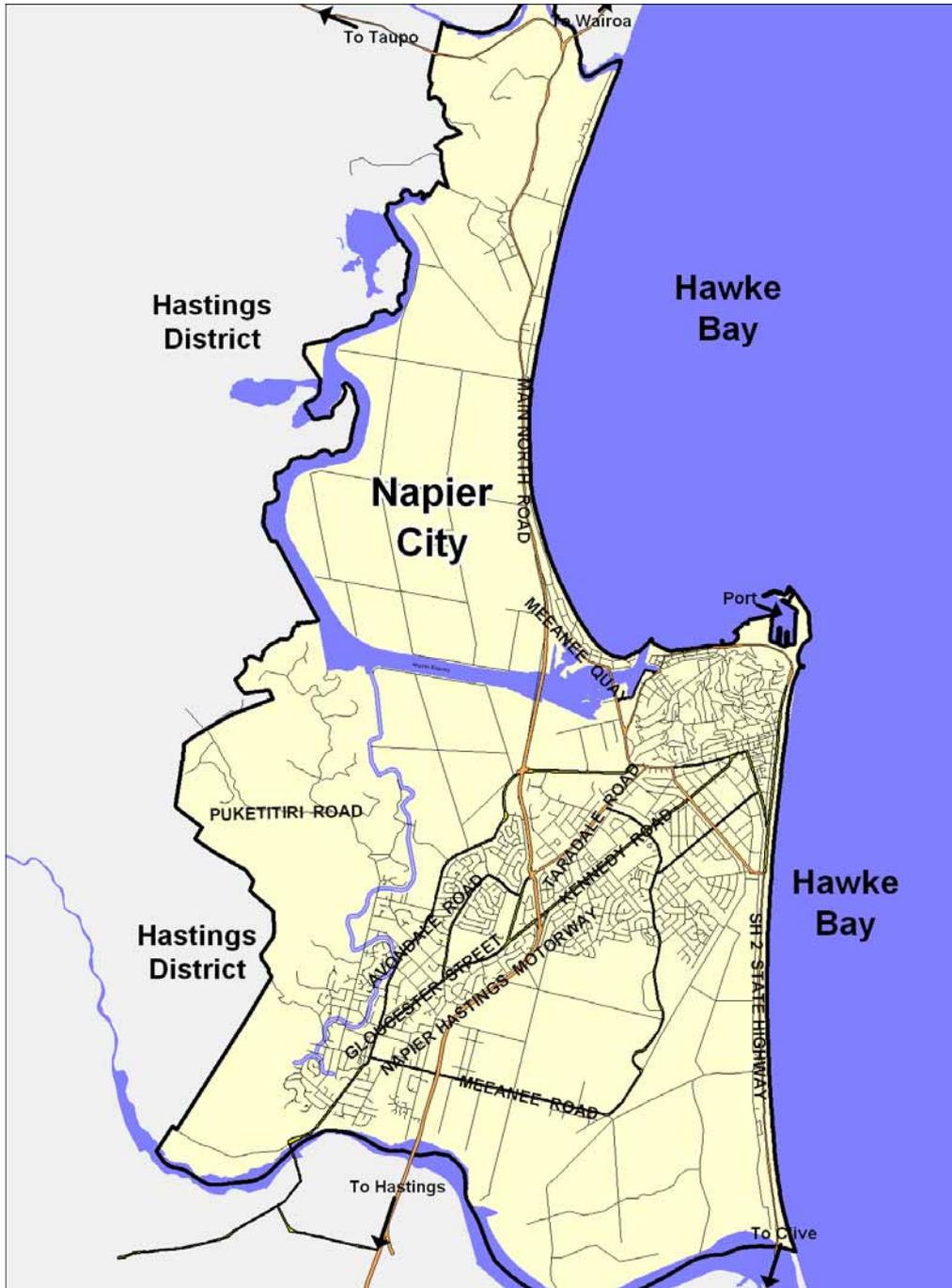
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1 Introduction

1.1 Overview

Council water services are already well described in Asset Management Plans, Essential Services Development Reports, and the Long Term Council Community Plan. This assessment summarises Council services, elaborates on private services, and concentrates on specific public health related matters. The assessment presents a high-level consolidated view of the services in each community area. The description of services in each community area, or group of communities where the services and issues are the similar, is not intended as a statement of service provision for an individual property therefore should not be used in this way. For the purposes of this assessment, water services are:

- Water supply
- Stormwater disposal
- Wastewater disposal
- Wastewater treatment

Sanitary services are:

- Public Toilets
- Cemeteries
- Crematoria
- Refuse

Napier City Council (NCC) operates within the framework of health related legislation. The standards applicable to water and sanitary services are:

- Health Act 1956
- Burials and Cremations Act 1964
- Building Act 2004 and 1991 - sanitation provisions
- NZ Drinking Water Standards 2000

The Medical Officer of Health monitors incidence of disease in the region and liaises with NCC officers and asset managers on potential health risks or incidence relating to health. The environmental health unit monitors and reports on public health issues on a case-by-case basis.

The three main legislative controls of private service activities relating to individual dwellings, are:

- Health Act 1956
- Resource Management Act 1991
- Building Act 2004

Hawke's Bay Regional Council sets and administers the regulations controlling the environmental impact of water and sanitary services under the Resource Management Act 1991.

Napier City Council exercises powers pursuant to the Resource Management Act, Building Act, and Health Act to regulate the provision of private water and sanitary services.

Napier City Council Environmental Health officers operate within the framework of the Health Act. In the event of a reported in-sanitary incident, the environmental health officers follow up in the first instance. As a last resort, a building may be declared in-sanitary to achieve closure where all other available procedures have proved unsuccessful.

1.2 Consultative Procedure

The Draft Water and Sanitary Services Assessment (WSSA) was subject to Public Consultation fully in accordance with the Local Government Act 2002, summarised as follows;

A brief overview of the information contained in the DRAFT Water and Sanitary Services Assessment was published in the edition of "Proudly Napier" distributed to households as an insert in the Napier Mail on 16 Feb 2005.

The Draft WSSA document and the Summary of the Information (this document) contained in the Draft WSSA document were available for viewing at the Council offices, Taradale Library and Napier Library. It was also available on the NCC website www.napier.govt.nz.

The **Timetable for Consultative Procedure for the WSSA** was

Wednesday 2 March 2005 3.00pm	Decision of Council to adopt the Draft WSSA
Saturday 5 March 2005	Draft WSSA available to public and public submissions open
FRIDAY 15 April 2005 NOON	SUBMISSIONS CLOSED
Thursday/Friday 26/27 May 2005 9.00am – 4.00pm	Hearings Committee Meeting heard and considered public submissions
Wednesday 22 June 2005 3.00pm	Ordinary Council Meeting at which the WSSA was adopted

All enquiries about the WSSA should be directed to: Works Asset Department, Phone 835 7579.

2 Water Services

Water Services are wastewater, water supply, and stormwater. The public health issue to consider for wastewater services is inappropriate wastewater discharge, and for water supply, the main issue is contamination of drinking water. In particular, all supplies such as schools, cafes, golf courses, hotels, and other commercial establishments supplying over 25 people for more than 60 days of the year, should be a Registered Community Water Supply with the Ministry of Health.

The health risks of not providing stormwater services are not as severe as for wastewater or water supply services. It is more of an environmental issue with health side effects such as land erosion or flooding issues, where contaminated floodwater enters properties and renders them uninhabitable. Buildings constructed before 1991 that are located in 1 in 50-year event flood areas may be at risk, as they were constructed to lower standards relevant at the time, and are not required by law to upgrade to current standards.

It is important to note that even with compliance with the 1 in 50 year (2%) flood design standards, there are areas that still may flood in storm conditions of a 50 year flood event or greater, as shown in Figure 9 page 25.

The cost of designing systems to standards greater than for 50-year flood events can increase significantly with relation to the increase in protection from flooding. Therefore, to improve systems to design standards higher than this can be prohibitively expensive

Council wastewater and water supply serviced areas are clearly defined; either a property is served or it is not as shown in Figure 1 page 8 and Figure 2 page 9. However, stormwater does not divide easily into public and private designations. It is defined by catchments as shown in Figure 3 and Figure 4, and, for the purposes of this assessment, the catchment and its management is considered to be the public served area and the on-site provision the privately served areas.

A summary of the community areas, defined for the purposes of this assessment as shown in Figure 5 page 12, the population and the water services provision status is shown in Table 1.

The community areas are loosely defined boundaries solely for the purposes of this assessment to group service provisions and for addressing the health status generally as a whole community. In some areas, such as Bay View, there is a mix of reticulated and un-reticulated wastewater systems and stormwater systems which give rise to different considerations. Notwithstanding this, the areas lie within the same catchments for stormwater and groundwater purposes and must be considered as an integrated whole. These communities are not intended for planning purposes, which is done strictly by the District Plan. The areas are not intended as a definition of the limits of service provision for individual properties, or clusters of properties, therefore should not be used in this way.

Figure 1 – The Extent of the Napier City Council Wastewater Service

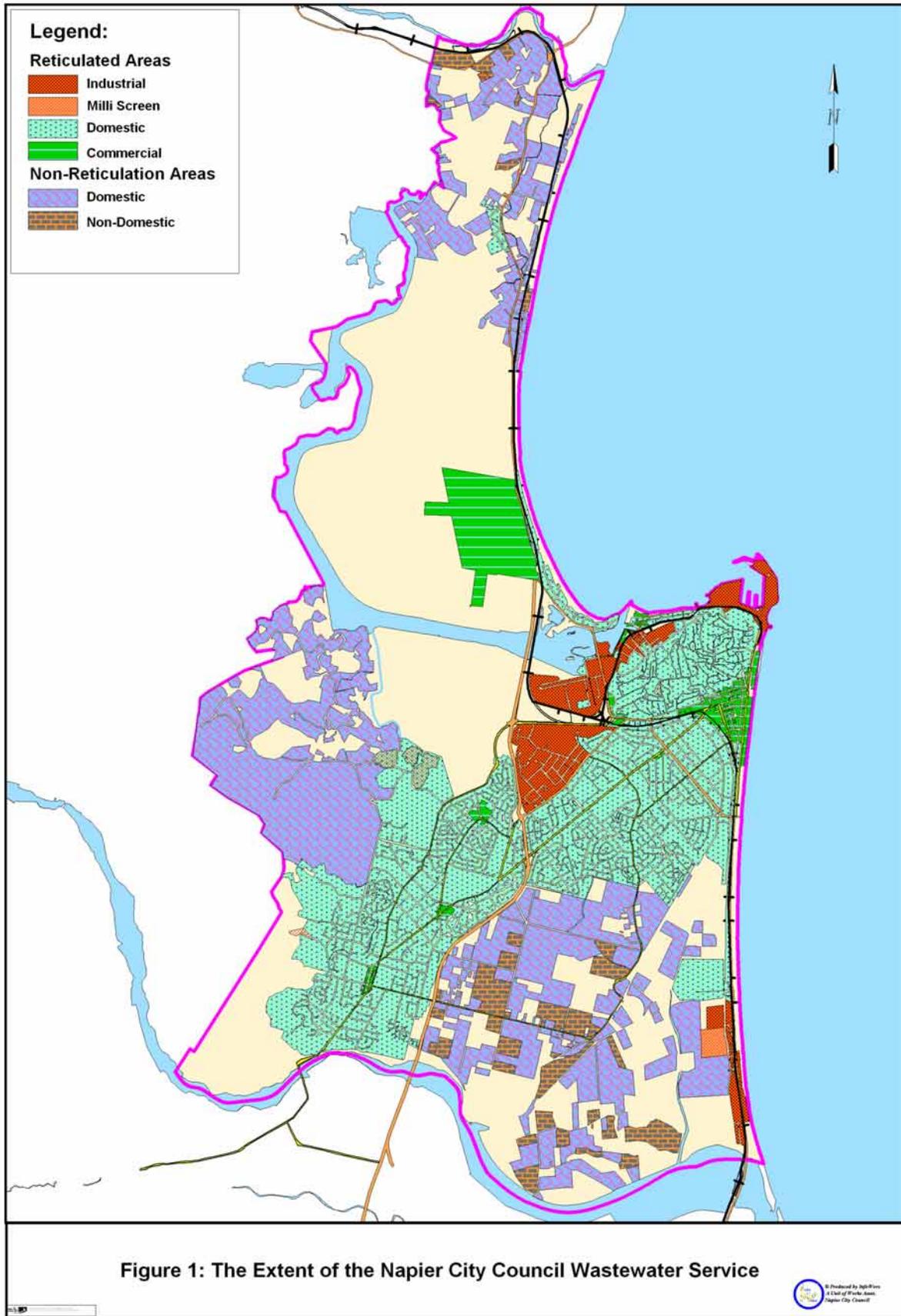


Figure 2 – The Extent of the Napier City Council Water Supply Service

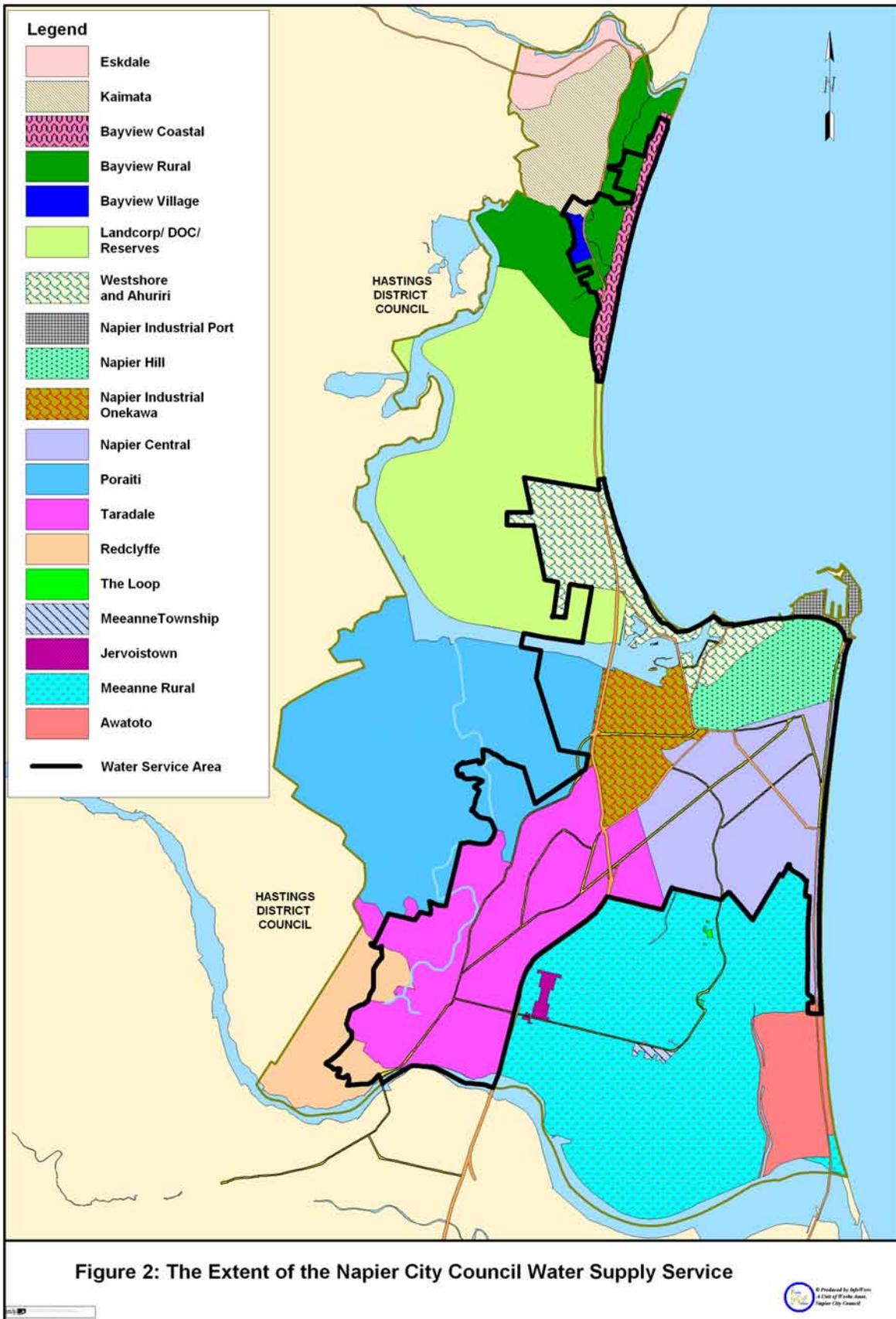


Figure 3 – Stormwater Catchments and Drainage in Southern Part of NCC Area



**Figure 3:
Stormwater Catchments and Drainage in
Southern Part of NCC Area**

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A Unit of Works Asset,
Napier City Council

Figure 4 – Stormwater Catchments and Drainage in Northern Part of NCC Area

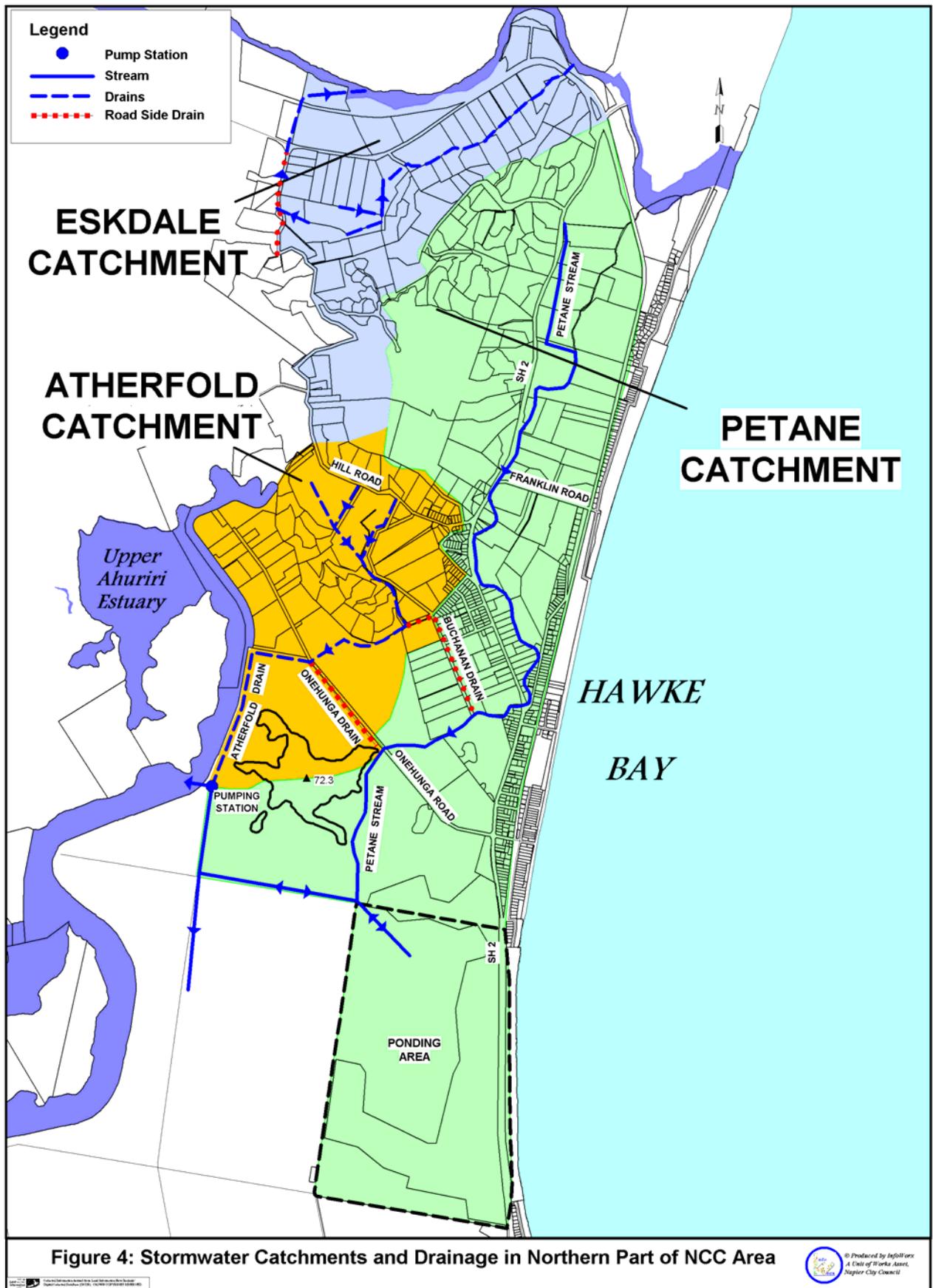


Figure 5 – Water and Sanitary Services Assessment Communities

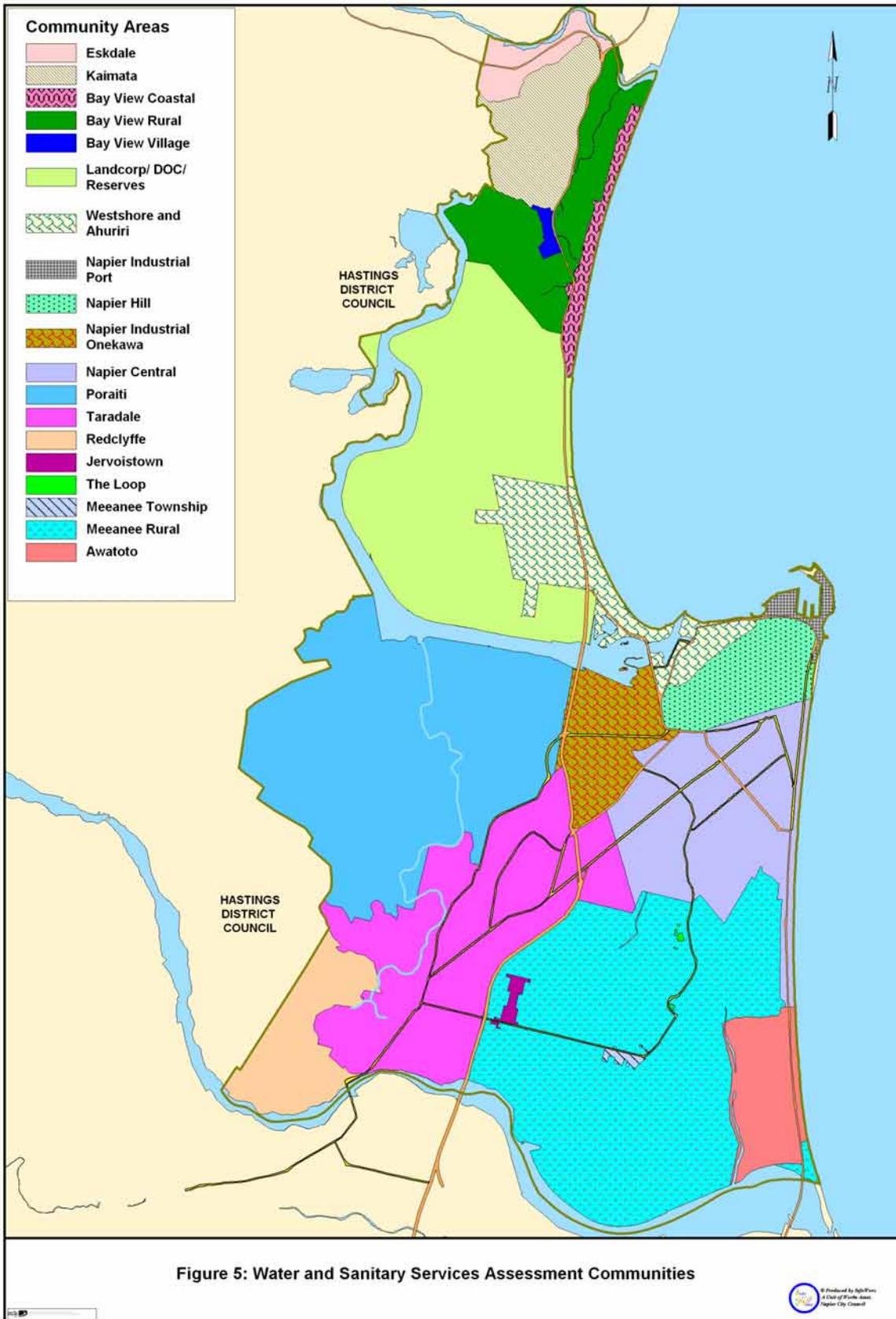


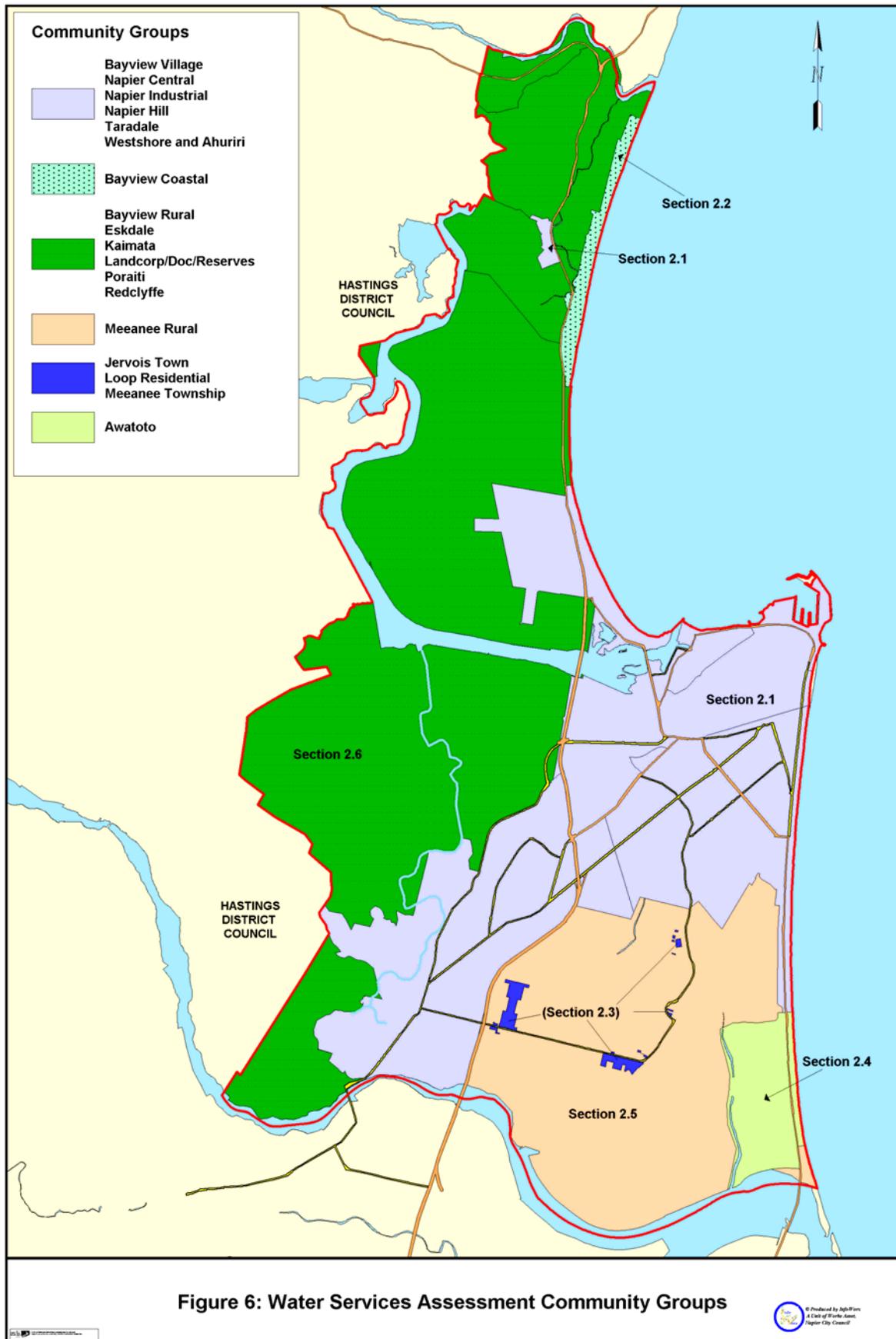
Table 1 – Water Service Provision Summary

Community For the purposes of this assessment	Area Description	District Plan Zoning	Population		Served by public system		
					Wastewater	Water Supply	Stormwater
Eskdale	Rural Flat	Main Rural	21	0.04%	x	x	Part
Kaimata	Rural Hill	Rural residential	186	0.3%	x	15%	Part
Bayview Rural	Rural Flat/hill	Main Rural Rural Residential	189	0.4%	x	35%	Part
Landcorp farm	Rural Flat	Rural conservation	29	0.1%	x	x	x
Bayview Village	Semi-urban Flat	Rural Settlement	324	0.6%	36%	✓	✓
Bayview Coastal	Semi-urban Flat	Rural Settlement	1,005	2%	x	✓	Part
Lagoon farm	Rural Flat	Rural Conservation Main residential	6	0.01%	x	x	✓
Poraiti	Rural Hill	Rural residential	588	1%	x	x	Part
Redclyffe	Rural Flat/Hills	Main Rural	25	0.05%	x	x	Part
Napier Central	Urban Flat	Various Zones. Residential, Commercial and Industrial Environment	18,072	34%	✓	✓	✓
Taradale	Urban Flat		24,188	45%	✓	✓	✓
Napier Hill	Urban Hill		5,589	10%	✓	✓	✓
Westshore & Ahuriri	Urban Flat		1,842	3%	✓	✓	✓
Napier industrial	Urban Flat		123	0.2%	✓	✓	✓
Jervoistown	Semi-urban Flat	Rural Settlement	386	1%	x	x	Part
Meeanee rural	Rural flat	Main Rural	620	1%	x	x	Part
The Loop	Rural flat	Rural Settlement	43	0.1%	x	x	✓
Meeanee township	Semi-urban Flat	Rural Settlement	118	0.2%	x	x	✓
Awatoto Residential	Semi-urban Flat	Main residential	297	1%	x	x	Part
Awatoto Industrial	Semi-urban Flat	Main Industrial			✓	x	
TOTAL			53,652	100%	49,931	51,237	51,815
See District Plan for full zoning description Data Source: Statistics New Zealand 2001 except; *TM 1: Bay View Reticulation – Options Evaluation – March 2002 **Aerial View MapIT estimate count of dwellings and population based on average per dwelling of Statistics NZ data				population % dwellings	93.1% 19,556	95.5% 20,047	96.6% 20,280

The status of public and private water services by community area are detailed in groups below as shown in Figure 6:

- Taradale/Napier Hill/Westshore & Ahuriri/Napier Industrial/Bay View Village/Napier Central
- Bay View Settlement
- Jervoistown/Meeanee Township /The Loop
- Awatoto
- Meeanee Rural
- Kaimata/Eskdale/Bay View Rural/Landcorp Farm/Poraiti/Redclyffe

Figure 6 – Water Services Assessment Community Groups



There is potential for extending the Council wastewater and water supply reticulation for existing dwellings and infill in some areas that are currently not reticulated, given the right circumstance and funding. However, as there is less than 10% (161 dwellings) of infill scattered in the non-serviced areas, the only realistic option for reticulation extension is where these dwellings are concentrated in one location and property owners are prepared to meet the cost.

2.1 Taradale/Napier Hill/Westshore & Ahuriri/Napier Industrial/Bay View Village/Napier Central

2.1.1 Wastewater

All these areas are flat urban, except Napier Hill and a small part of Taradale, served by the Council wastewater reticulated system. However, in Bay View Village only 36% (44 of 122) of the properties have connected to the available system to date. NCC has resolved that connecting to the Bay View reticulated sewerage scheme is voluntary. For this area, on-site systems are still in use on properties that have not yet connected to the reticulated wastewater system, and the same health risks identified for Bay View Settlement below therefore currently apply.

Based on the 2001 census, 49,931 people or 19,556 dwellings are served by the reticulation and milliscreen pre-treatment system. This represents 93.5% of the population.

A current capacity limitation of the wastewater system exists due to excessive infiltration of groundwater to the reticulation and pumping stations during peak wet weather conditions. Some remedial works to address this inadequacy in the short term are already complete such as upgrades to pumping stations. Ongoing collection pipe maintenance and replacement will improve the situation, and allow some additional capacity for the infill growth. However, worldwide experience suggests that infiltration problems are difficult to solve and may never be solved completely.

The District Plan provides for greenfield development areas in the north-west sufficient to meet anticipated demand until 2021. These areas will be serviced by the public system, through one or more new pumping stations and a pressure main to the milliscreen, and secondary pumping stations and trunk collection mains, as provided for by the 2005-2014 capital plan. Additional capacity requirements for further greenfield growth beyond 2021 (2,330 households) have not yet been considered at a detailed level. The additional load due to this greenfield growth and the 93% of infill that falls in the reticulated area also has consequential additional load on the treatment plant. Construction of a new advanced primary treatment plant is already underway to cater for current public demand for increased treatment quality. The new treatment plant will produce dewatered primary sludge, which, in the short-term will be taken to landfill, while more suitable long-term options are explored, including beneficial re-use.

2.1.2 Water Supply

Water Quantity

These communities are 100% supplied by the Council water supply reticulated system, which is from a secure, high quality source and does not require any treatment. Monitoring of water quality is carried out in accordance with the requirements specified in the Drinking-Water Standards for New Zealand 2000. The source is adequate to satisfy the needs in the foreseeable future. Based on the 2001 census, 51,237 people or 20,047 dwellings are served by the reticulated system. This represents 95.5% of the population.

Currently the system capacity is 103% of design demand. Based on the 2001 population in the water supply served areas, the daily demand is 54,113 m³ (54.1 million litres). Current capacity of the water supply system is 55.6 million litres achieved by the following additions and upgrades:

- The capacity of two existing wells being increased
- A new well being constructed
- A new booster pump station being constructed to transfer water from the wells in Taradale to reservoirs on Napier Hill.

Some planned additions to address remaining current storage inadequacies and some future growth needs are to increase Bay View and Taradale reservoir capacities; and reticulation upgrades.

As well as building new infrastructure, alternative demand management methods employed include metering commercial properties and residential properties in technically sensitive areas of the system, and an ongoing conservation education programme.

Major upgrades in the capital plan to meet future needs are;

- A new Reservoir at Bay View (2005/06)
- A new Well at Awatoto (2008/09)
- A new Reservoir at Taradale (2009/10)
- The Awatoto trunk main (2009/10)

Water Quality

The reticulated water supply system must be kept and maintained in a manner such that the water is safe for human consumption. The Drinking Water Standards for New Zealand 2000 (DWSNZ 2000), released by the Ministry of Health, details how to assess the quality and safety of drinking water. The DWSNZ 2000 lists the maximum concentrations of chemical, radiological, and microbiological contaminants acceptable for public health in drinking water.

The compliance criteria for monitoring are classified according to the health risk posed by non-compliance. In order of importance they are:

- Priority 1 determinands

Microorganisms of public health significance, specifically the bacteria *Escherichia coli* (*E. coli*), which indicate the presence of faecal matter, and the protozoa *Giardia* and *Cryptosporidium*.

- Priority 2 determinands

Chemical and radiological contaminants that may have adverse effects of public health in sufficient concentrations. Includes inorganic chemicals such as heavy metals and organic compounds such as pesticides.

- Priority 3 and 4 determinands

Generally monitoring is not required from a public health perspective.

Refer to the Ministry of Health Drinking Water Standards for New Zealand 2000 for full details of the monitoring requirements. The NCC water-sampling programme covers the 10 supply wells and the 3 distribution zones of Napier, Taradale, and Bay View. The distribution zones have been registered for bacteriological monitoring and sampling compliance since 1995. This year the supply complied in full on these points.

For community drinking-water supplies (defined as water supplies that serve more than 25 people for at least 60 days a year) the DWSNZ 2000 also specify the sampling protocols that must be observed to demonstrate that drinking-water complies with the Standards.

The supply is not chlorinated, because Napier's water is sourced from an aquifer that is free from surface or climatic influences at the points where water is abstracted, as detailed in a report by the Institute for Geological and Nuclear Sciences dated May 2002. There is a slight but real possibility of contamination of unchlorinated water supply systems, and the water supply network is therefore monitored at a level 50% higher than required by the Standards.

Additional chemical monitoring is currently underway to confirm whether water from the Taradale distribution zone should be assigned as "aggressive". Aggressiveness is not a determinant as such, but indicates that the drinking-water supply has a tendency to corrode household metal pipes, taps, and other plumbing. If these corrode, small amounts of metals are removed from their surface and either deposited in the pipe (such as rust), or remain dissolved in the water. It is the dissolved metals that are of concern here.

Corrosion is usually a slow process, but aggressive water held within the plumbing overnight can end up with high dissolved metal levels. When a tap is turned on, the first glass of water may

contain these metals and should not be drunk or used for food preparation. Instead, the first two glasses of water should be used for some other purpose.

Sporadic indications of bacteriological contamination have been detected at Kaimata reservoir for some time. Most of the time the interval between events is longer than the minimum specified by the Drinking Water Standards, but the persistent nature of the problem points towards an issue that needs to be managed carefully. Contamination events are treated in accordance with the requirements of the Drinking Water Standards as such events present a risk to public health. All known potential contamination sources have been eliminated and efforts to overcome the problem are now focussed on two areas:

- The pipeline that connects the reservoir to the reticulation is very long and also serves as the supply to the reservoir. The turnover of water in Kaimata reservoir is therefore reduced. Water in the reservoir gets old if it is not replaced by some other means, and the reservoir is therefore flushed on a fortnightly basis.
- Bay View used to be supplied from shallow bores from the Esk River. The turbid water from the Esk River deposited a sediment layer on the inside of the pipes, with the greatest impact in the Kaimata area. Regular flushing of the reservoir appears to be insufficient to overcome the effect of bacteria that may be present inside the sediment layer and a regular chlorination programme has therefore recently been added to the flushing program.

The Ministry of Health grading for the NCC water supply is Bb, which means low level of risk of contamination. The Ministry of Health publicly reports the water results on a research institute drinking water website.

The reticulated water supply is neither treated nor disinfected as the supply is of good quality and free from bacterial, viral, and protozoal contamination. However, the absence of a residual disinfectant (chlorine) does increase the risk of contamination. Precautionary activities to maintain quality in the storage and distribution system include:

- Sampling regime 50% more than the Drinking Water standard requirements.
- Sampling is also carried out in the vicinity of maintenance works.
- All operations personnel qualified to work on the system for maintenance and repairs. The tailored training programme includes health issues of water systems.
- High turnover of water stored in the reservoirs. For example the Kaimata reservoir is currently on a fortnightly flushing programme

The aesthetic quality of water in Napier South, Central Business District, and Napier Hill has been improved dramatically during the last decade as a result of the decommissioning of wells in Napier

South, Maraenui, and Onekawa. New wells that produce water of a very high aesthetic quality have been developed in the Taradale area to replace the capacity that was lost.

The iron/manganese deposit that was formed on the inside of pipes before the wells in Napier South, Maraenui, and Onekawa were decommissioned still exists, but the problems of odour and discolouration that used to occur is now almost something of the past. Mains flushing and cleaning programmes ensure that the frequency of these events stays low.

2.1.3 Stormwater

The majority of these communities are served by reticulated stormwater drains, except Bay View , refer below, which is served by a mixture of limited reticulation, open drains, and soakage.

Because the current storm event design criteria (10-year event no surface flooding and 50-year event floor levels) have only been in effect since 1995, the problem areas are where there is old design standard reticulation.

The majority of the city is still the pre 1995 standard so the level of compliance with the 10-year flood requirement is low, particularly part of Napier Central and Taradale. Since 1995, a total of \$2.3 million has been spent on stormwater upgrading. Upgrading to this 10- year standard is an ongoing program.

Known 50-year flood locations are shown in Figure 9 on page 25.

Items in the 10-year capital plan for catchment wide improvements and/or to meet growth needs are;

- Saltwater creek bank improvements, completed 03/04.
- Plantation drain widening.
- Lagoon Farm concrete channel.
- Cross Country drain.
- Saltwater creek bank improvements
- Bay View upgrade (see following)
- Taradale and Greenmeadows rural road standard upgrades (see following)

Bay View Stormwater Upgrade Options¹

Bay View, although serviced by a combination of open roadside ditches and two major open drains, has suffered from significant flooding events. The combination of lack of reticulation, low lying land and flooding events has initiated Council to regulate development through planning controls.

Although Council has provided for some upgrading of one of the major drains (Petane) in the 10 year capital plan, the balance of works to cater for residential development is significant.

The most effective options (c) and (d) identified in Bay View are to upgrade the Petane drain at a cost of \$740,000, detailed as follows;

Option (c) Upgrade the State Highway 2/Rogers road culvert, which restricts the passage of water. The effect would be to reduce the upstream peak but the down stream peak would increase. Further investigation required to determine the extent of this effect, and any required mitigation measures.

Option (d) Widen channel downstream of State Highway 2, Rogers road culvert. This increases the capacity to convey water to the ponding area on Landcorp/DOC land to the south.

The result is a reduction of peak water levels upstream of SH2 by 0.73m and downstream by 0.37 m.

Taradale and Greenmeadows

Some roads in Taradale and Greenmeadows are still the old rural high crown standard inherited from the former Taradale Borough and County Council. These roads do not provide adequate local stormwater drainage, storage and secondary flow path needs. There is a road upgrade programme in place in Taradale, which includes the necessary upgrades to construct drains leading to the reticulation system.

¹ Bay View Stormwater Report 2000 section 16-18

2.2 Bay View Settlement

2.2.1 Wastewater

Bay view settlement is a semi-urban area comprising, in the majority, lots less than 2500 m². With the exception of the village area, it is currently served by on-site wastewater systems, the majority septic tanks, and the remainder secondary wastewater treatment systems.

Within the village area, 44 of 122 properties are currently connected to the reticulated system. The potential health issues of on-site wastewater systems are (1) un-serviced septic tanks; and (2) surface ponding of effluent soakage fields leaking to stormwater drains, in high ground water areas, or infiltrating the gravels, which potentially contribute to groundwater contamination. The pathogens in domestic effluent can cause disease such as intestinal worms and mild diarrhoea and in some instances more severe infections.

There is potential for a health risk to occur where discharge leaks from septic tanks. The cumulative effect of multiple events presents a greater risk to public health, especially in more densely populated areas such as this area.

The Hawke's' Bay Regional Council (HBRC) Regional Plan 2001 specifies *where the wastewater receives no more than primary treatment, or advanced primary treatment, that discharge shall be onto or into a property with a land area of no less than 2500 m²*. The communities where all lot sizes are less than 2500 m² and where septic tanks (advanced primary/primary treatment) were installed before 2001, and may still exist, are shown in Figure 7.

Not all of the properties smaller than 2500m² within these areas are serviced by septic tanks, but as a whole, the cumulative risk to public health in these areas is higher than elsewhere. It is noted that there is no indication that the level of risk is unacceptable at this time.

Individual septic tanks are the responsibility of the owner. General advice on on-site system maintenance can be obtained from HBRC. Ideally, septic tanks should be replaced with on-site wastewater treatment systems or properties should be connected to the reticulated system where available.

The current proposals to meet inadequacies of this nature for existing dwellings and infill is the Bay View reticulated wastewater scheme as shown in Figure 8, which is already underway in the village. The cost of providing wastewater reticulation and disposal to the existing residential properties at Bay View will be recovered by connection charges and a Council contribution.

Council has completed stage 1 of the Bay View extension to the reticulated system which services the village settlement, but is not proceeding with stages 2 and 3, to serve the coastal settlement,

due to lack of support for the scheme by the homeowners. Implementation of stages 2 and 3 will be reviewed over time as circumstances change.

2.2.2 Water Supply

Bay View settlement is fully served by the reticulated water supply system, as described in the section Taradale/Napier Hill/Westshore & Ahuriri/Napier Industrial/Bay View Village/Napier Central above.

Based on the 2001 census, 1,329 people or 500 dwellings are served by the water supply reticulated system. This represents 2.5% of the population.

2.2.3 Stormwater

Bay View settlement stormwater systems are a mixture of limited reticulated collection, open drains, and soakage. Bay View in general falls in the 50-year flooding area, as shown in Figure 9 on page 25. However, elevated sites on the coastal gravel barrier are not subject to inundation.

Council is investigating a number of options in Bay View relating to the control of stormwater and its funding in the area. In the Village, the land is low lying and inundation can occur in adverse weather conditions thus the control of stormwater can be difficult. Property owners or potential purchasers can approach Council for advice if they are concerned about inundation of sites.

Figure 7 – Inadequately Serviced Community Areas for Private Wastewater Systems

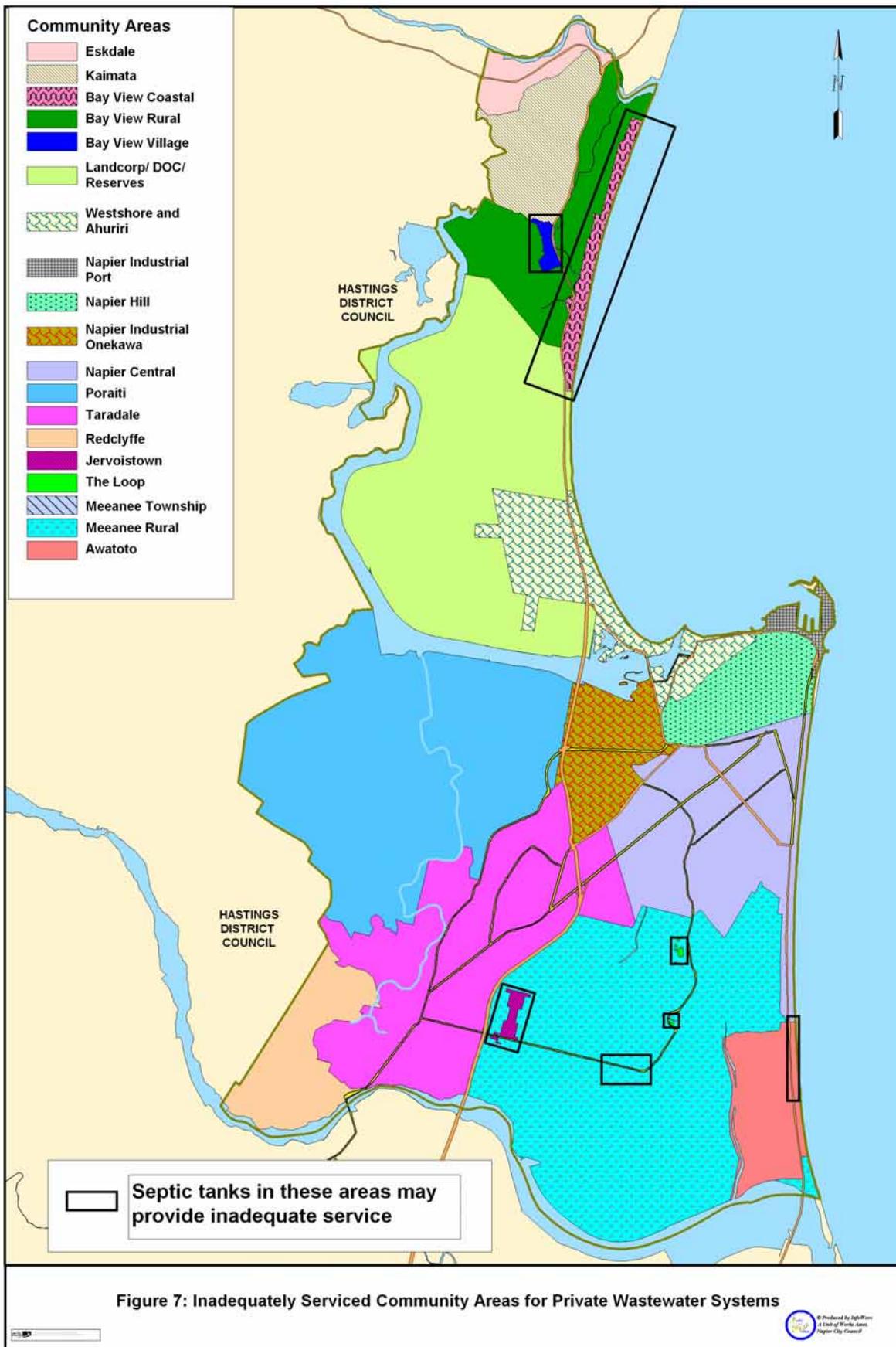


Figure 8 – Bay View Wastewater Scheme Proposed Staging

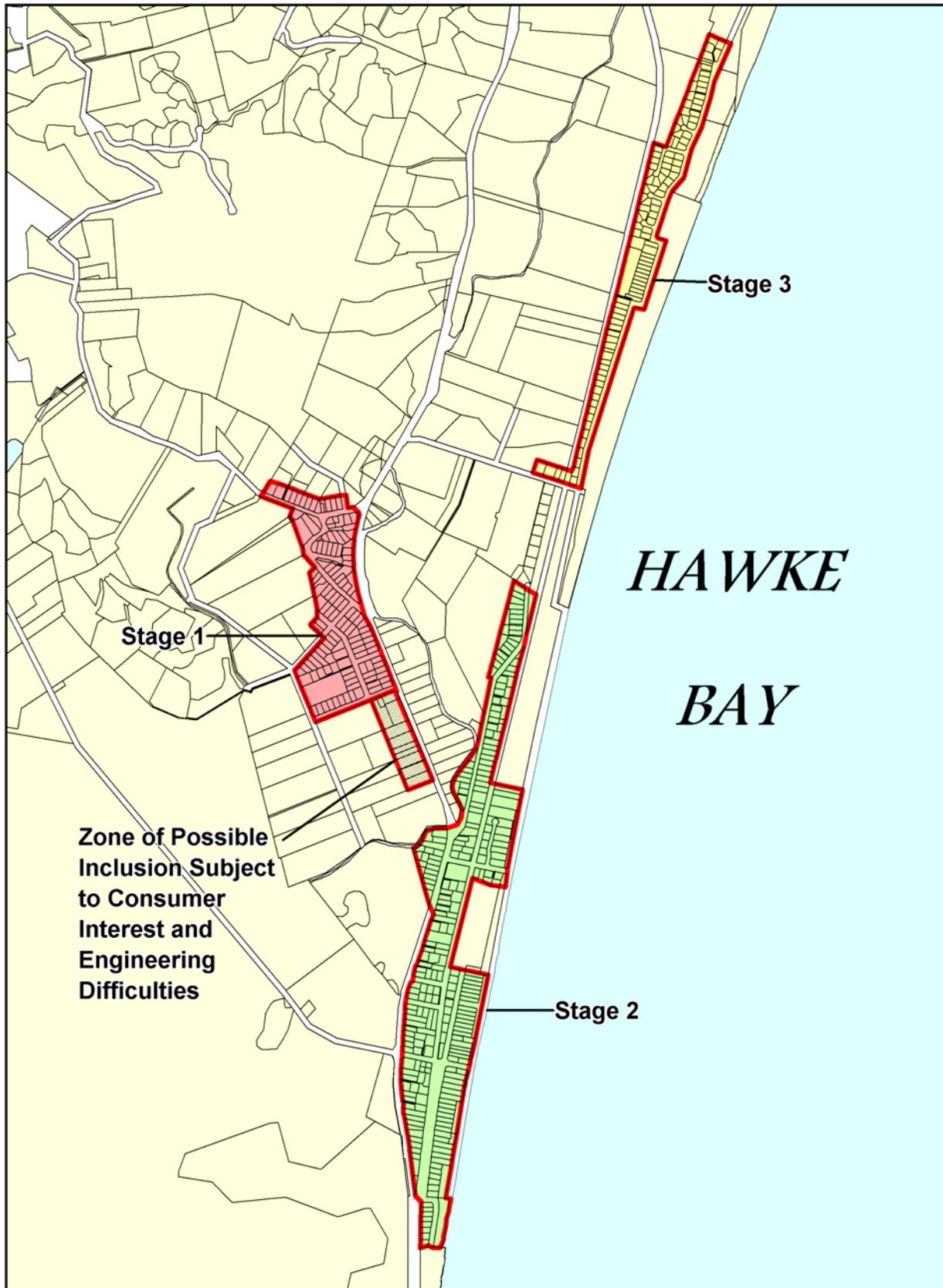


Figure 8: Bayview Wastewater Scheme Proposed Staging

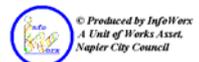


Figure 9 – NCC Area 50-Year Flood Locations



2.3 Jervoistown/Meeanee Township /The Loop

2.3.1 Wastewater

These communities are served by on-site wastewater systems, the majority septic tanks, and the remainder secondary wastewater treatment systems. In these areas, the number of people served is 547, or 190 dwellings, from the 2001 census. This represents 1% of the population.

The area is low-lying with heavy soils that do not allow effective disposal of septic tank effluent. Septic tanks are used by the majority of dwellings in these areas. The minimum HBRC permitted method for this area since 2001 has been Secondary On-site Wastewater Treatment System.

There is potential for a health risk to occur in these communities where septic tanks perform poorly and/or lot size is inadequate for effluent disposal. The cumulative effect of multiple events presents a greater risk to public health, especially in more densely populated areas. The HBRC Regional Plan 2001 specifies *where the wastewater receives no more than primary treatment, or advanced primary treatment, that discharge shall be onto or into a property with a land area of no less than 2500 m².*

The communities where all lot sizes are less than 2500 m² and where septic tanks (advanced primary/primary treatment) were installed before 2001, and may still exist, are shown in Figure 7 on page 23. Not all of the properties smaller than 2500m² within these areas are served by septic tanks, but as a whole, the cumulative risk to public health in these areas is higher than elsewhere. There is potential for contamination of the Jervoistown drains from domestic effluent. Data from a HBRC sampling regime of the stormwater drains in the Jervoistown area, "indicates that the bacteriological surface water quality of the Jervoistown drains does pose a health risk to people making contact with the drain water". However, there is no reported incidence of disease to suggest the public health risk is anything other than low..

There is no current proposal to install wastewater reticulation in Jervoistown, Meeanee Township or The Loop. The cost of a Council coordinated scheme would be shared by all the beneficiaries.

Jervoistown like Bay View has the potential to be reticulated. Should a decision be reached to install a wastewater reticulation in Jervoistown, and the scheme could be funded, a complete wastewater reticulation system would be required. The cost of such a system would have to be met by properties that connect to it and would be relatively high. At present, there is no economically justifiable proposal for a reticulated wastewater scheme in Jervoistown.

The cost of providing services to The Loop is high, because the cost will be shared by a small number of properties, and in Meeanee Township, because it is geographically removed from the existing reticulated system. Therefore, a reticulated wastewater system is not economically viable.

2.3.2 Water Supply

These areas are served by private water supply systems; the majority either individual or shared bores. These areas obtain water from the same good quality abundant source as the Napier City Council public supply, which ensures an uncontaminated supply, provided on-site systems are properly maintained, and the protection of public health.

However, as there is little in-system treatment used for drinking water supplies from private bores, this may prompt users to employ point of use treatment such as an off-the-shelf filter. This type of treatment is unnecessary and may actually be detrimental to water quality. Consumer studies about off-the-shelf filters suggests the filter medium, e.g. charcoal, can support bacterial growth if the device is not maintained regularly, which often happens with limited lifetime household goods such as this. Its use is probably based only on perceived effect and a feel good factor in the user. However, this simply imparts a false sense of security. This is considered a health risk but cannot be measured directly.

This area has one Ministry of Health (MoH) Registered Community Supply, Meeanee School. Some E.coli monitoring was undertaken in 2003, however copies of laboratory analytical reports were not forwarded in a timely enough manner to be included in the national report.

It is the owner's responsibility to ensure the quality of a registered private supply. These operators are obliged to formally test their source and supply in accordance with the NZ drinking water standards and submit results to the Ministry of Health, which consolidates the results in the "Annual Review of Drinking-Water Quality in New Zealand".

2.3.3 Stormwater

Stormwater provisions in these communities are a mixture of private land and open roadside drains for which there are no current inadequacies or health risk identified.

However, for infill development, catchment wide improvements would be needed. There are currently no proposals for this work.

2.4 Awatoto

2.4.1 Wastewater

This community is served by on-site wastewater systems. Based on the 2001 census, 297 people or 123 dwellings are served by the reticulated system. This represents 0.6% of the total population.

Awatoto industrial is connected to the public wastewater system. The two larger industries have direct pumped connection whilst the others are reticulated to a local pumping station. There is sufficient capacity to permit future wet industry growth.

There is potential for a health risk to occur where septic tanks perform poorly and/or lot size is inadequate for effluent disposal. The cumulative effect of multiple events presents a greater risk to public health, especially in more densely populated areas. The HBRC Regional Plan 2001 specifies *where the wastewater receives no more than primary treatment, or advanced primary treatment, that discharge shall be onto or into a property with a land area of no less than 2500 m².*

The communities where all lot sizes are less than 2500 m² and where septic tanks (advanced primary/primary treatment) were installed before 2001, and may still exist, are shown in Figure 7 on page 23. Most of the properties smaller than 2500m² within these areas are serviced by septic tanks, so as a whole the cumulative risk to public health in this area is higher than elsewhere. It is noted that there is no indication that the level of risk is unacceptable.

It is possible to connect to the nearby existing system subject to a suitable funding proposal. There are currently no proposals for this work.

2.4.2 Water Supply

This area is served by private water supplies, either individual or shared bores. These areas obtain water from the same good quality abundant source as the Napier City Council public supply, which ensures an uncontaminated supply, provided that on-site systems are properly maintained, and the protection of public health.

However, as there is little in-system treatment used for drinking water supplies from the private bores, which may prompt users to employ point of use treatment such as an off-the-shelf filter. This type of treatment is unnecessary and may actually be detrimental to water quality. Consumer studies about off-the-shelf filters suggests the filter medium, e.g. charcoal, can support bacterial growth if the device is not maintained regularly, which often happens with limited lifetime household goods such as this. Its use is probably based only on perceived effect and a feel good

factor in the user. However, this simply imparts a false sense of security. This is considered a health risk but cannot be measured directly.

This area has one MoH Registered Community Supply, Maraenui Golf Club. However the testing program information reported by MoH does not allow for further interpretation, and information from the owner is unavailable at present.

It is the owner's responsibility to ensure the quality of a registered private supply. These operators are obliged to formally test their source and supply in accordance with the NZ drinking water standards and submit results to the Ministry of Health, which consolidates the results in the "Annual Review of Drinking-Water Quality in New Zealand".

2.4.3 Stormwater

Stormwater provisions are a mixture of reticulation, open roadside drains, and soakage for which there are no current inadequacies or health risk identified.

The 50-year flood areas include an industrial development area in Awatoto. For industrial development to proceed, catchment level improvements would be required including pumping capability to the sea. There are currently no proposals for this work.

2.5 Meeanee Rural

2.5.1 Wastewater

These communities are served by on-site wastewater systems, the majority septic tanks and the remainder secondary on-site wastewater treatment systems. Based on the 2001 census, 620 people or 215 dwellings are served by the reticulated system. This represents 1% of the population.

The area is low-lying with heavy soils that may not allow effective disposal of septic tank effluent. There is potential for a health risk to occur in these communities where septic tanks perform poorly and/or lot size is inadequate for effluent disposal. The cumulative effect of multiple events presents a greater risk to public health. The HBRC Regional Plan 2001 specifies *where the wastewater receives no more than primary treatment, or advanced primary treatment, that discharge shall be onto or into a property with a land area of no less than 2500 m².*

However, the population density in this area is low (there are only 4 properties under 2500 m²), and it is therefore appropriate that the area be served with on-site systems because there is no risk to public health. A high water table may force secondary wastewater treatment systems on some properties.

2.5.2 Water Supply

These areas are 100% served by private water supply systems, the majority either individual or shared bores. These areas obtain water from the same good quality abundant source as the Napier City Council public supply, which ensures an uncontaminated supply, and the protection of public health, provided that on-site systems are properly maintained.

However, as there is little in-system treatment used for drinking water supplies from private bores, this may prompt users to employ point of use treatment such as an off-the-shelf filter. This type of treatment is unnecessary and may actually be detrimental to water quality. Consumer studies about off-the-shelf filters suggests the filter medium, e.g. charcoal, can support bacterial growth if the device is not maintained regularly, which often happens with limited lifetime household goods such as this. Its use is probably based only on perceived effect and a feel good factor in the user.

However, this simply imparts a false sense of security. This is considered a health risk but cannot be measured directly.

2.5.3 Stormwater

Open stormwater drains serve this area. That part of the serpentine catchment, in the north part of this area, which is low lying (along the length of the Serpentine drain) falls into the 50-year flood zone. The cross-country drain will reduce the flood levels in this area by reducing the contributing catchment area.

2.6 Kaimata/Eskdale/Bay View Rural/Landcorp Farm/Poraiti/Redclyffe

2.6.1 Wastewater

These communities are 100% served by private systems, both secondary on-site wastewater treatment systems and septic tanks. Based on the 2001 census, this is 425 people, or 160 dwellings, which represents 0.3% of the population. There are no identified health issues and public health is protected.

2.6.2 Water Supply

In these communities, 78% of the population use bores or rainwater for water supply, the remainder is reticulated. Based on the 2001 census, 331 people or 125 dwellings are served by the reticulated system. This represents 0.2% of the population. The bore water used comes from a limestone aquifer and is hard. It sometimes has appreciable iron content also. These are generally aesthetic problems only and there is no evidence to suggest the water is not bacteriologically sound. Treatment should be considered for these communities on a case-by-case basis as they source their water from unconfined or semi-confined aquifers where the risk of contamination is higher. The bore water supply is adequate in quantity for domestic needs.

Around 20% of the non-reticulated population use rainwater and, on occasion, they experience water shortage, and resort to tankered water for supplementary drinking needs. Commercial tankering operations can obtain the water from any legitimate source. Where water is taken from the reticulated supply, which should be through a commercially metered connection, quality is not an issue as water is from the public reticulated supply, which is covered by the drinking water standards requirements. However, where it is taken from another source the quality is subject to the same restrictions and limitations of any other private supply and quality is not guaranteed.

There are currently no Council licensing requirements or legislative regulations for tankering operations and practices. The biggest issue is the risk of contamination of the water from contact with the tanker. The New Zealand Water and Wastes Association has recognised this potential problem and a code of practice is under development.

A potential health risk of rainwater systems is the lack of treatment. Some of the individual property assessments in these communities indicated the presence of E. coli in the rainwater. There may be a public misconception that roof water is generally safer than bore waters, which is not the case. A public education campaign to promote collection management, such as the diversion of first flush, should be considered.

Where in-system treatment is not used, as is the majority case for the private systems, residents may employ point of use treatment as an alternative method, which may pose a health risk.

Point of use treatment; such as an off-the-shelf filter, is unnecessary, and may actual be detrimental to water quality. Consumer studies about off-the-shelf filters suggests the filter medium, e.g. charcoal, can support bacterial growth if the device is not maintained regularly, which often happens with a limited lifetime household goods such as this. Probably, the basis of use is on perceived effect and a feel good factor in the user. However, this simply imparts a false sense of security. This is considered a health risk but cannot be measured directly.

Extension to the reticulated system is only suitable for multiple housing developments where the costs of extending the system to the required location can be shared among the beneficiaries. Technically feasible options to service areas such as Kaimata and Eskdale with reticulated systems have been identified but the cost is currently unacceptable to the community.

The most desirable option for overcoming these water shortage issues is extension to reticulation, however, the cost of technically feasible solutions such as for Kaimata and Eskdale is currently unacceptable to property owners.

In the interim, or for areas where reticulation is not possible, property owners can make improvements to current systems. Deeper bores or new and improved rainwater collection

equipment may improve the quantity of supply. Rainwater system manufacturers and consultants may be able to advise on system improvements.

These communities have two MoH Registered Community Supply, Eskdale School, and Hohepa Homes Trust. Some E.coli monitoring was undertaken in 2003. However either sampling regimes were not met or copies of laboratory analytical reports were not forwarded in a timely enough manner to be included in the national report. Eskdale school is planning to connect to a reticulated supply (HDC) in the near future which will eliminate any potential public health issues associated with the current on-site water supply.

It is the owner's responsibility to ensure the quality of a registered private supply. These operators are obliged to formally test their source and supply in accordance with the NZ Drinking Water Standards and submit results to the Ministry of Health, which consolidates the results in the "Annual review of Drinking-Water Quality in New Zealand".

2.6.3 Stormwater

The majority of these communities are served by open stormwater drains. The majority of Bay View Rural community falls into the 50-year flood area. Council is investigating a number of options in Bay View Rural relating to the control of stormwater and its funding in the area. In Bay View Rural and Village, the land is low lying and inundation can occur in adverse weather conditions thus the control of stormwater can be difficult. Property owners or potential purchasers can approach Council for advice if they are concerned about the possible flooding and inundation of sites.

3 Sanitary Services

3.1 Public toilets

For the purposes of this assessment, public toilets on private property are considered those facilities available to the public at commercial premises.

There are 42 public toilets, shown in Figure 10, a demand requirement driven by the high number of visitors. There is no shortage of public facilities, but 7 facilities are identified as inadequate. However, this is due to their poor physical condition rather than any health issue. The number of notified cases of inadequate facility is minimal and they are dealt with on a case-by-case basis as the need arises.

Current provision is adequate for the immediate future needs, and is reviewed on a regular basis. Additional services can be added at relatively short notice, as changing demand becomes apparent.

3.2 Cemeteries

There are 6 public cemeteries, as shown in Figure 11, and only the Eskdale cemetery water supply and the Wharerangi cemetery car park are targeted for upgrade work included in the 10-year capital plan. There is no requirement for any additional land to be designated for current or future demand. There are no identified health risks, therefore, current provision is deemed suitable to meet current demands. There are no private cemeteries in the NCC area. All existing cemetery provisions are covered by the NCC public system.

3.3 Crematoria

The crematorium for the Hawke's Bay region is owned and operated by Hastings District Council. All matters relating to public health for crematoria are covered by the Water and Sanitary Services assessment 2005 for Hastings District.

Privately owned and operated crematoria are becoming increasingly common in New Zealand, as an alternative to Council operated facilities. There is one private facility in the Onekawa industrial area that has been operating since September 1992. The facility does not have other funeral services facilities therefore the other sanitary needs relating to cremation are taken care of by the funeral director at other locations and there are no health related issues to consider.

3.4 Refuse

Refuse is covered separately by the Solid Waste Management Plan 2000, and it is therefore not included in this assessment, as provided for by Local Government Act 2002.

4 Medical Officer of Health Consideration of Comments

The Medical Officer of Health has comprehensively reviewed the Draft Water and Sanitary Services Assessment. Points of public health significance raised by the Medical Officer of Health have been considered and are reflected in the assessment, as summarised below;

- Some areas of Napier District abstract water from unconfined or semi-unconfined aquifers. These areas are Redclyffe, Poraiti, Landcorp Farm, Bay View Rural, Kaimata, and Eskdale. Water from unconfined or semi-confined aquifers is at greater risk of contamination therefore treatment should be considered for these communities on a case-by-case basis.
- Secondary on-site Wastewater Treatment Systems (SWTS) may not be as effective in treating sewage as they are believed to be. These systems generally perform better than septic tanks, but only if designed, installed, operated, and maintained correctly. Users should contact HBRC where SWTS are likely to be required.

- The sporadic but ongoing problem of contamination found in or near the Kaimata reservoir is interpreted as a public health risk at those times. As all known usual potential contamination sources have been eliminated, efforts to overcome the problem are now focussed on two areas:
 - The reservoir is flushed on a fortnightly basis to increase turnover of the water in the reservoir, as it tends to be low because the pipeline that connects to the reticulation is long and tends to act like storage.
 - A regular chlorination programme has recently been started, as the regular flushing programme has not proved effective in preventing biofilm build up that may be present.

The situation is under continuous monitoring. Most of the time, the interval between events is longer than the minimum specified by the Drinking Water Standards.

- In public toilets the supply of a surfactant such as soap and hand drying facility would be a relevant improvement from a public health perspective. This service is currently not provided in most public toilets in Napier City due to a history of chronic vandalism of facilities and the economic challenge this presents.
- A potential health risk has been identified in areas where septic tanks perform poorly and/or lot size is inadequate for effluent disposal. For example, a HBRC sampling regime of the stormwater drains in the Jervoistown area, "indicates that the bacteriological surface water quality of the Jervoistown drains does pose a health risk to people making contact with the drain water". However, there is no reported incidence of disease to suggest the risk to public health is anything other than low. The suitability of individual wastewater treatment systems depends on the effectiveness of the chosen method for the local conditions and the cumulative effect on neighbouring properties. The activities for on-site wastewater disposal systems are regulated by the HBRC.
- There may be a public misconception that roof water is generally safer than bore waters, which is not the case. Improvements to the operation and maintenance of these systems are needed, and a public education campaign to promote collection management, such as the diversion of first flush, should be considered.

There is ongoing coordination between Medical Officer of Health and Napier City Council to address some of these issues further.

Figure 10 – NCC public toilet locations

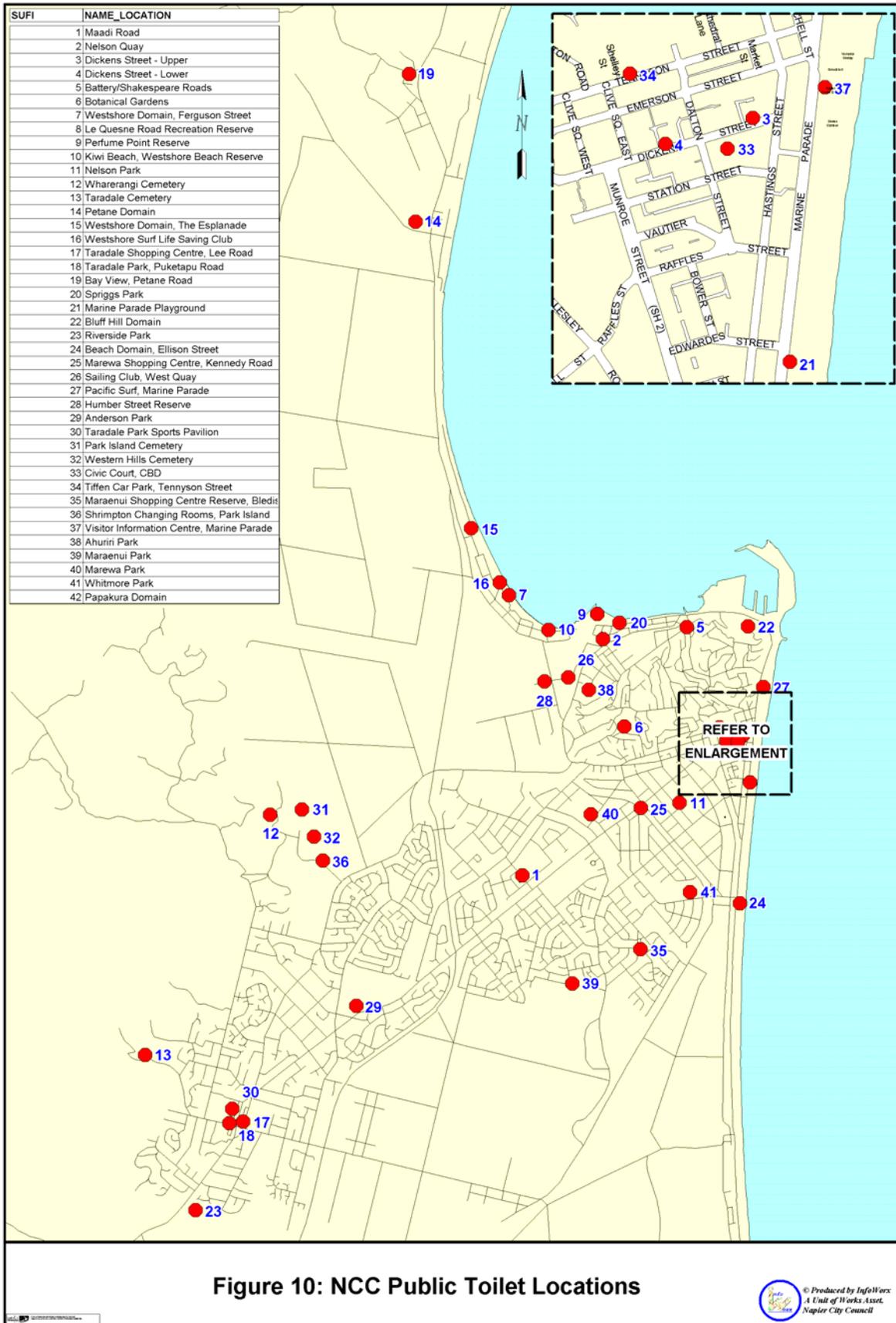


Figure 11 – NCC cemetery locations



Figure 11: NCC Cemetery Locations

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5 Community solutions

The main issue facing communities in providing private service is affordability. Household income impacts the ability to purchase expensive off the shelf products or invest in turnkey projects. Many problems relate to technical management where there is pressure for additions, because large rural areas tend to have more problems and/or less adequate systems.

Private systems operate best where there are community-based systems with grass roots involvement. However, there are some inherent difficulties for those involved in community-based systems such as:

- Ability
- Motivation
- Access to information
- Understanding of need
- Requirements for self assessment
- Pressures of additional visitors
- Community size and/or isolation

There are some assistance schemes available to communities such as the Sanitary works subsidy scheme.

6 Management facilitation

Council provides management facilitation for private owners, including the knowledge base, educational material, minor services, such as laboratory facilities, and professional advice on a limited case-by-case basis. Some of the services offered by Council that can facilitate this process and further protect public health are:

- Practical services such as water sampling testing kits
- Education material such as disease information leaflets

Other available information includes advice from the Regional Council on a variety of matters, and information from the Ministry of Health such as, "The sewage and wastewater integrated management handbook".

Some suggested improvements are promoting the community planning process and consultation between groups and instilling the management responsibility to prevent system failure.

7 Limitation of the Assessment

Limitations due to the cost and difficulty involved and the availability of resources, which may have impacted on the completeness of the assessment, are:

- Limited individual property information for private services
- Time consuming, expensive
- Limited time to go into detail about the link between sanitation provisions, personal hygiene and health impact
- Limited time to make better links with Ministry of Health data

The Council has made as full and balanced assessment as is possible within these limitations.

8 Conclusion

The assessment concludes that the level of water and sanitary services that are provided to the Napier community by council and private owners is generally sufficient for the protection of public health. However, some areas raised in the report identified as a potential for public health risk are;

- **On-site wastewater disposal**

There is potential for health risk in areas where septic tanks perform poorly and/or lot size is inadequate for effluent disposal. The cumulative effect of multiple non-complying discharges from existing systems presents a greater risk to public health, especially in more densely populated areas. The HBRC Regional Plan 2001 specifies *where the wastewater receives no more than primary treatment, or advanced primary treatment, that discharge shall be onto or into a property with a land area of no less than 2500 m²*. The communities where all lot sizes are less than 2500 m² and where septic tanks were installed before 2001, and may still exist, are:

- Bay View village
- Bay View Coastal
- Jervoistown
- The Loop
- Meeanee township

Not all of the properties smaller than 2500m² within these areas are serviced by septic tanks, but as a whole, the cumulative risk to public health in these areas is higher than elsewhere. However, there is no reported incidence of disease to suggest the risk to public health is anything other than low.

- **Rainwater collection systems**

The assessment indicated the presence of E. coli in some rainwater systems. There may be a public misconception that roof water is generally safer than bore waters, which is not the case for NCC area. Improvements to the operation and maintenance of these systems are recommended, . A public education campaign to promote collection management, such as the diversion of first flush, should be considered.

- **Bore water from unconfined or semi-unconfined aquifers**

No comprehensive sampling programme exists for private bores. However, Napier District bores are bacteriologically sampled as part of the building consent process for all new houses. For communities sourcing water from unconfined or semi-unconfined aquifers, treatment should be considered on a case-by-case basis. This applies to Kaimata, Eskdale, Bay View Rural, Poraiti, Landcorp farm and Redclyffe. The lack of treatment for these bores is not a health risk where the source quality is demonstrated to be good.

The assessment presents a general overview of the services in each community area. The description of services in each community, or group of communities where the services and issues are the same, is not intended as a statement of service provision for an individual property therefore should not be used in this way.

The service provision for communities; whether public health is protected; how current and future demand is addressed; and the Council's role in meeting these needs are summarised in Table 2, Table 3 and Table 4.

Table 2 – Wastewater Services Summary

Wastewater					
Community	Served by Public system	Current demand met by	Community Health Protected in general (May not apply to an individual property)	Future demand met by	Council Intended Role
Eskdale	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Kaimata	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Bay View Rural	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Landcorp farm	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Bay View Village	36%	36% Council Reticulation scheme / 64% Private on-site systems*	Potential for adverse cumulative effect***	Council Reticulation Connection available	Advocate Connection
Bay View Coastal	✘	Private on-site systems*	Potential for adverse cumulative effect	Private on-site systems*	Planning Controls/Private system management facilitation
Lagoon farm	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Poraiti	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Redcliffe	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Napier Central	100%	Existing system and items in Council Capital Plan	Yes	Items in Council Capital Plan	O, M and R of existing system
Taradale	100%		Yes		
Napier Hill	100%		Yes		
Westshore & Ahuriri	100%		Yes		
Napier industrial	100%		Yes		
Jervois town	✘	Private on-site systems*	Potential for adverse cumulative effect	Private on-site systems*	Planning Controls and Private system management facilitation
Meeanee rural	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
The Loop	✘	Private on-site systems*	Yes	Private on-site systems**	Planning Controls and Private system management facilitation
Meeanee township	✘	Private on-site systems*	Potential for adverse cumulative effect	Private on-site systems**	Planning Controls and Private system management facilitation
Awatoto Residential	✘	Private on-site systems*	Yes	Private on-site systems*	Planning Controls and Private system management facilitation
Awatoto Industrial	Industrial only	Fully met by Council	Yes	Capacity for expansion exists	O, M and R of existing system
*Septic Tank/Secondary Wastewater treatment system **Secondary Wastewater Treatment System ***until all existing dwellings connected				O, M and R = Operation , Maintenance and Renewal	

Table 3 – Water Supply Services Summary

Water Supply					
Community	Served by Public system	Current demand met by	Community Health Protected in general (May not apply to an individual property)	Future demand met by	Council Intended Role
Eskdale	✘	Private on-site systems**	Potential Risk - Contamination in rainwater systems	Potential for reticulation by Council	Promote scheme if appropriate
Kaimata	15%	Public system/Private on-site systems**	Potential Risk - Contamination in rainwater systems	Potential for reticulation by Council	Promote scheme if appropriate
Bay View Rural	35%	Public system/Private on-site systems**	Potential Risk - Contamination in rainwater systems	Private on-site systems**	Private system management facilitation
Landcorp farm	✘	Private on-site systems**	Yes	Private on-site systems**	Private system management facilitation
Bay View Village	100%	Existing system / item in Council Capital Plan	Yes	Council Capital Plan	O, M and R of existing system
Bay View Coastal	100%	Existing system / item in Council Capital Plan	Yes	Council Capital Plan	O, M and R of existing system
Lagoon farm	✘	Private on-site systems*	Yes	Potential for reticulation by Council	Promote scheme if appropriate
Poraiti	✘	Private on-site systems**	Potential Risk - Contamination in rainwater systems	Private on-site systems**	Private system management facilitation
Redcliffe	✘	Private on-site systems*	Yes	Private on-site systems*	Private system management facilitation
Napier Central	100%	Existing system	Yes	Items in Council Capital Plan	O, M and R of existing system
Taradale	100%		Yes		
Napier Hill	100%		Yes		
Westshore & Ahuriri	100%		Yes		
Napier industrial	100%		Yes		
Jervoistown	✘	Private on-site systems*	Yes	Potential for reticulation by Council	Promote scheme if appropriate
Meeanee rural	✘	Private on-site systems*	Yes	Private on-site systems*	Private system management facilitation
The Loop	✘	Private on-site systems*	Yes	Potential for reticulation by Council	Promote scheme if appropriate
Meeanee township	✘	Private on-site systems*	Yes	Private on-site systems*	Private system management facilitation
Awatoto Residential	✘	Private on-site systems*	Yes	Potential for reticulation by Council	Promote scheme if appropriate
Awatoto Industrial	✘	Private on-site systems*	Yes	Potential for reticulation by Council	Promote scheme if appropriate
		*Individual or Shared bores **Bores or rainwater	O, M and R = Operation , Maintenance and Renewal		

Table 4 – Stormwater Services Summary

Stormwater					
Community	Served by Public system	current demand met by	Community Health Protected in general (May not apply to an individual property)	future demand met by	Council Intended Role
Eskdale	Part	Open roadside drains	Yes	Private systems	Private system management facilitation
Kaimata	Part	Open roadside drains/reticulated collection	Yes	Private systems	Private system management facilitation
Bay View Rural	Part	Open roadside drains	Potential Risk - Majority in 50-year flood area*	Bay View upgrade options	Promote upgrade if appropriate
Landcorp farm	*	Private land	Yes	Private systems	Private system management facilitation
Bay View Village	100%	Open roadside drains	Potential Risk - All in 50-year flood area*	Bay View upgrade options	Promote upgrade if appropriate
Bay View Coastal	Part	Mixture reticulated collection and soakage	Yes	No requirement	Regulate development**
Lagoon farm	100%	Open roadside drains	Yes	Council Capital Plan	O, M and R of existing system
Poraiti	Part	Open roadside drains	Yes	Private systems	Private system management facilitation
Redcliffe	Part	Open roadside drains	Yes	Private systems	Private system management facilitation
Napier Central	100%	Reticulated, generally pre 95 standard	Potential Risk***	Items in Council Capital Plan	O, M and R of existing system
Taradale	100%	Reticulated	Potential Risk***	Items in Council Capital Plan	O, M and R of existing system
Napier Hill	100%	Reticulated and open/sealed roadside drains	Yes	Items in Council Capital Plan	O, M and R of existing system
Westshore & Ahuriri	100%	Reticulated, generally pre 95 standard	Yes	Items in Council Capital Plan	O, M and R of existing system
Napier industrial	100%	Reticulated	Yes	Items in Council Capital Plan	O, M and R of existing system
Jervoistown	Part	Open roadside drains	Yes	Upgrade required to proceed with development	Regulate development**
Meeanee rural	Part	Open roadside drains	Potential Risk - Serpentine in 50-year flood area*. Meeanee Rural generally no risk	No requirement	Planning controls
The Loop	100%	Open roadside drains	Yes	No requirement	Regulate development**
Meeanee township	100%	Open roadside drains	Yes	No requirement	Regulate development**
Awatoto Residential	Part	Mixture reticulated and open roadside drains- and soakage	Yes	No requirement	Regulate development**
Awatoto Industrial			Potential Risk - Development area in 50-year flood area	Upgrade required to proceed with development	Promote upgrade if appropriate
		*houses under 50 year flood floor levels at risk *** Pirimai, Napier South and Marewa (to a lesser extent)- not all houses above the 50 year flood levels		O, M and R = Operation , Maintenance and Renewal ** through the District Plan	