Supply of Essential Services to Sub-standard Housing in NECBOP

Research on issues facing water supply, wastewater disposal, and energy supply in rural Northland, East Cape, and eastern Bay of Plenty

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Executive Summary

Research aim

The purpose of this research was to:

- identify issues that constrain rural households' access to essential services (sewage disposal, drinking water and energy) in Northland, the East Cape, and the eastern Bay of Plenty (NECBOP)
- identify opportunities for improvement of government support for essential services in NECBOP.

Research method

The research method had two components.

- A review of existing documentation on the status of essential services in NECBOP and the assistance available.
- Interviews with 32 key informants, including staff from central government agencies that provide assistance for essential services, NECBOP district council staff, housing managers from iwi organisations, and independent technical experts.

Status of essential services in NECBOP

Northland, the eastern Bay of Plenty, and the East Cape face very similar circumstances with respect to their essential services.

- Drinking water and wastewater reticulation is mostly restricted to main townships.
- Dwellings outside of areas of reticulation use primarily septic tank systems for wastewater treatment and rooftop water collection for drinking water supplies.
- Problems are experienced with septic systems failing due to their age, inadequate maintenance, or inappropriate design for the conditions. This has resulted in insanitary conditions such as the leaching of untreated sewage into waterways.
- Problems are experienced with contamination and inadequacy of rooftop drinking water supplies. Inadequacy can result from dry summer conditions or from under-sized or leaky water tanks or spouting.
- Electricity reticulation is more extensive than water reticulation. The great majority of rural NECBOP houses are able to connect to the national grid. However, there are issues with the reliability of supply to remote areas, and some particularly remote houses and communities lack reticulated electricity.

Barriers to adequate essential services

The main factors thought to constrain households' access to adequate services were:

- the high cost of on-site systems
- insufficient household knowledge about, and motivation to maintain, on-site systems
- an acceptance among households of inadequate services
- difficulties in accessing good tradespeople
- a limited ability to develop new reticulated water and sewerage solutions because communities and district councils lack the resources to finance and run them.

Support for essential services

A number of government schemes provide support for low income households to access essential services. These are run by Housing New Zealand, the Ministry of Health, Te Puni Kōkiri, and the Ministry of Social Development. There are also a small number of community-run schemes that support maintenance of on-site systems through provision of assistance and education for home-owners.

This support has provided significant benefit through alleviating some of the sub-standard housing conditions in NECBOP. Interviewees said that without the support, the situation would be much worse than it is at present.

The effectiveness of the support has, however, been compromised by several factors.

- Insufficient funding to address the overall need in NECBOP.
- Insufficient attention to addressing the knowledge, skill and motivational barriers to upgrade and maintenance of on-site infrastructure, resulting in unsustainable interventions.
- Insufficient coordination between agencies and sources of support.
- An approach focussing more on individual houses than on communities or clusters of houses.
- A lack of awareness among potential recipients of the available support.

Some gaps in the availability of support were identified. The most frequently mentioned were:

- that there is little support for reticulated community sewerage upgrades
- that households whose income or assets take them just above the threshold for the Rural Housing Programme cannot access support for repairing on-site infrastructure.

Options for improvement

Improving government support for essential services will require a coordinated policy development process. This research is not intended to substitute for such a process, but it has identified a number of areas in which action could be taken. These are:

- continue to support initiatives to upgrade infrastructure
- address the overall insufficiency of funding
- address the knowledge, skill and motivational barriers to upgrade and maintenance of on-site systems
- take a longer term approach with the Rural Housing Programme
- place a greater emphasis on community engagement and socio-economic development of communities
- examine possibilities for increasing cluster and community reticulation
- improve coordination between support agencies and funding streams
- address the major gaps in support
- recognise the need for improved on-site wastewater treatment and electricity generation systems.

Contents

1. Background

Remote rural households can face particular difficulties in accessing adequate sewerage, drinking water supply, and energy supply. Lack of adequate services can pose significant health and environmental risks, for example contamination of waterways and groundwater by untreated sewage, insufficient, or contaminated drinking water supplies, and a fire risk from using candles for lighting.

In the last seven years several government schemes have been set up to provide support for the provision and maintenance of services to rural dwellings. A particular focus for some of these schemes has been the NECBOP region: Northland, eastern Bay of Plenty, and the East Cape, as these areas have been found to have particularly high concentrations of deprivation and sub-standard housing.[1] One such scheme is the Rural Housing Programme (RHP), administered by Housing New Zealand.

While considerable research and evaluation effort has gone into determining the need for and the effectiveness of government support for upgrade of housing, there are a particular set of issues with infrastructure that have not been fully examined in the published work to-date. Investigation of these issues is important because many sub-standard houses require costly upgrades to their drinking water, sewage disposal, or electricity infrastructure, and because solutions to these problems can differ from the house-by-house approach to repairs of dwellings. For example, solutions can involve reticulation of groups of houses.

The purpose of this study is to examine infrastructural issues facing sub-standard housing in NECBOP. This study is intended to provide a better evidence-base from which Housing New Zealand can improve its delivery of the RHP, improve coordination with other relevant agencies, and provide advice to Cabinet on the long term role of government in alleviating sub-standard housing. The specific aims of this work are to:

- develop an overview of the means of sewage disposal, supply of drinking water, and provision of energy that are used in the NECBOP area
- find out what factors present barriers to adequate sewage disposal, drinking water and energy in NECBOP
- determine how well existing government policies and practices are meeting needs for the supply and maintenance of essential services to low income households in NECBOP
- identify options for how HNZC support for the supply and maintenance of essential services to low income households in NECBOP could be provided more effectively.

More detail on the aims, research questions, scope, methods, and background to this study are given in the project plan, reproduced in Appendix A.

[1] For a summary of this information, see Centre for Research, Evaluation and Social Assessment Ltd (2007) An assessment of the rural housing programme 2001-2005/06: a synthesis of evaluation findings.

2. Research method

This study has taken a largely qualitative approach.

2.1. Review of pre-existing information

A number of pre-existing information sources were reviewed. These contributed to the determination of the existing status of essential services in NECBOP, the support available for infrastructure upgrades and maintenance, and verification of comments made by interviewees.

These sources included:

- NECBOP district council long term council community plans
- NECBOP district council sanitary water assessments
- the New Zealand Drinking Water Register database
- NECBOP electricity lines companies' asset management plans
- legislative documents relating to wastewater disposal, drinking water supplies and electricity provision
- evaluations of government schemes providing assistance for infrastructure
- documented information on the goals, criteria, and money allocated to schemes assisting infrastructure maintenance and upgrade in NECBOP
- technical information relating to on-site systems for wastewater disposal, drinking water collection and energy supply.

The specific sources used are referenced throughout the report.

2.2. Key informant interviews

Semi-structured interviews were held with key informants who had knowledge of infrastructural issues in NECBOP and knowledge of government policies and practices relating to infrastructure.

2.2.1. Interview schedules

Two interview schedules were developed: one for interviewees located in Northland, eastern Bay of Plenty, and the East Cape, who had particular knowledge of the infrastructural issues facing low income households in their region, and another for interviewees (normally located in Wellington), who had particular knowledge of central government policies and practices.

The questions from both schedules are reproduced in Appendix B.

Interview schedules were designed to elicit answers to the research questions listed in the project plan (see Appendix A). Due to the time constraints on the project, it was not possible to pre-test the schedules. However, attention was paid to their effectiveness in the first interviews, and minor modifications were made to improve the schedules for subsequent interviews.

2.2.2. Selection of interviewees

Interviewees were selected using a snowball sampling method. Initially, several Housing New Zealand regional managers and senior staff were contacted to seek their recommendations for interviewees. The people they suggested were then contacted to seek their agreement to be interviewed and their recommendations for further interviewees. In some cases, this process was repeated for the next group of recommended interviewees.

Through this method, an initial list of 41 interviewees was developed. The list was narrowed down to a final tally of 32 interviewees, selected on the basis of:

- their availability and willingness to be interviewed
- the anticipated depth and breadth of their knowledge of infrastructural issues
- the need to adequately represent:
  - Northland, eastern Bay of Plenty, and East Cape regional perspectives
  - central government agency perspectives
  - different organisation types, such as local authorities, iwi organisations, regional and centrally located branches of central government agencies, and independent contractors
  - different areas of expertise, including knowledge of
    - issues facing wastewater, drinking water and energy supply
    - technical aspects of constructing and maintaining infrastructure
    - health and environmental risks associated with inadequate infrastructure
    - social and economic factors impacting on infrastructure
    - government and non-government support for tackling infrastructural issues.

Those contacted were generally very willing to be interviewed. The interviewees are listed in Appendix C.

2.2.3. Conduct of interviews

The preferred option was to carry out interviews in person. However, where this was not possible, interviews were carried out over the telephone. In total 26 people were interviewed in person, and eight over the telephone.

Each interviewee was sent pre-interview information that described the nature and intent of the study, and provided summary of the interview questions. This information, and the confidentiality and reporting agreement forms that were used are reproduced in Appendix D.

Two interviewers attended each interview; one took the lead role in asking questions, and the other primarily took notes. Where interviewees granted permission, the interview was recorded and subsequently transcribed. Interviews usually took between one and a half and two hours

2.3. Analysis

Upon completion of the interviews, transcripts and notes were reviewed, and interviewee comments were collated into an excel spreadsheet, under the categories of:

- status of existing infrastructure in Northland, Eastern BOP and the East Cape

- barriers to adequate infrastructure
- support available for infrastructure
- effectiveness of support
- gaps and overlaps in support
- collaboration between agencies
- options for improvement of support.

Within each category emerging themes and sub-categories were identified.

Attention was paid to triangulation of findings. Where possible, interviewees' comments were checked for consistency with the information sources described in section 2.1, and with comments from other interviewees. In some cases individuals (interviewees and others) were followed up by telephone or e-mail, to check particular issues.

3. The status of essential services in NECBOP

This section of the report provides an overview of the current status of sewerage, drinking water supply and electricity supply in each of the three NECBOP regions. This provides a context for the rest of the report, where barriers to adequate services, support available for upgrades to services, and improvements to support will be discussed. This section is not, however, a comprehensive quantitative assessment of the overall adequacy of services in NECBOP. Development of such an assessment is a longer term piece of work, currently underway as part of the HNZC Community Housing Response Plan project (see section 5.1.1).

3.1. Northland

The area of Northland that is designated as within NECBOP is shown in Figure 1. This region is limited to the areas within the boundaries of the Far North District Council, the Kaipara District Council, and the Whangarei District Council.

3.1.1. Local authorities

The district councils within this region are Far North District Council, Kaipara District Council, and Whangarei District Council.

The regional council is Northland Regional Council.

3.1.2. Sewerage

The following information is sourced from a combination of interview responses and the district councils' long term council community plans.

Reticulated supplies:

Far North District Council

- The Far North District Council owns and operates 17 public wastewater schemes, serving the communities of:
    - Ahipara, Awanui, East Coast, Hihi, Kaeo, Kaikohe, Kaitaia, Kawakawa, Kerikeri, Kohukohu, Opononi, Paihia, Rangiputa, Rawene, Russell, Whangaroa, and Whatuwhiwhi.
- The council-run wastewater services serve a total of around 24,500 people. Populations served by each supply range in size from around 70 to 5300 people.
- Far North District Council estimate that there are also around 140 small, private wastewater systems in the district, owned by schools campgrounds, marae and hospitals (in addition to individual households' on-site wastewater supplies).[2]
- Far North District Council estimate that around 32,600 people inhabit properties that are not currently able to be connected to a reticulated wastewater system.[2]

Kaipara District Council

- Dargaville has a reticulated council-operated sewerage scheme.

[2] Far North Future Plan (LTCCP), 2006-2016. Available: http://www.fndc.govt.nz/ltccp/fnfp/index.asp

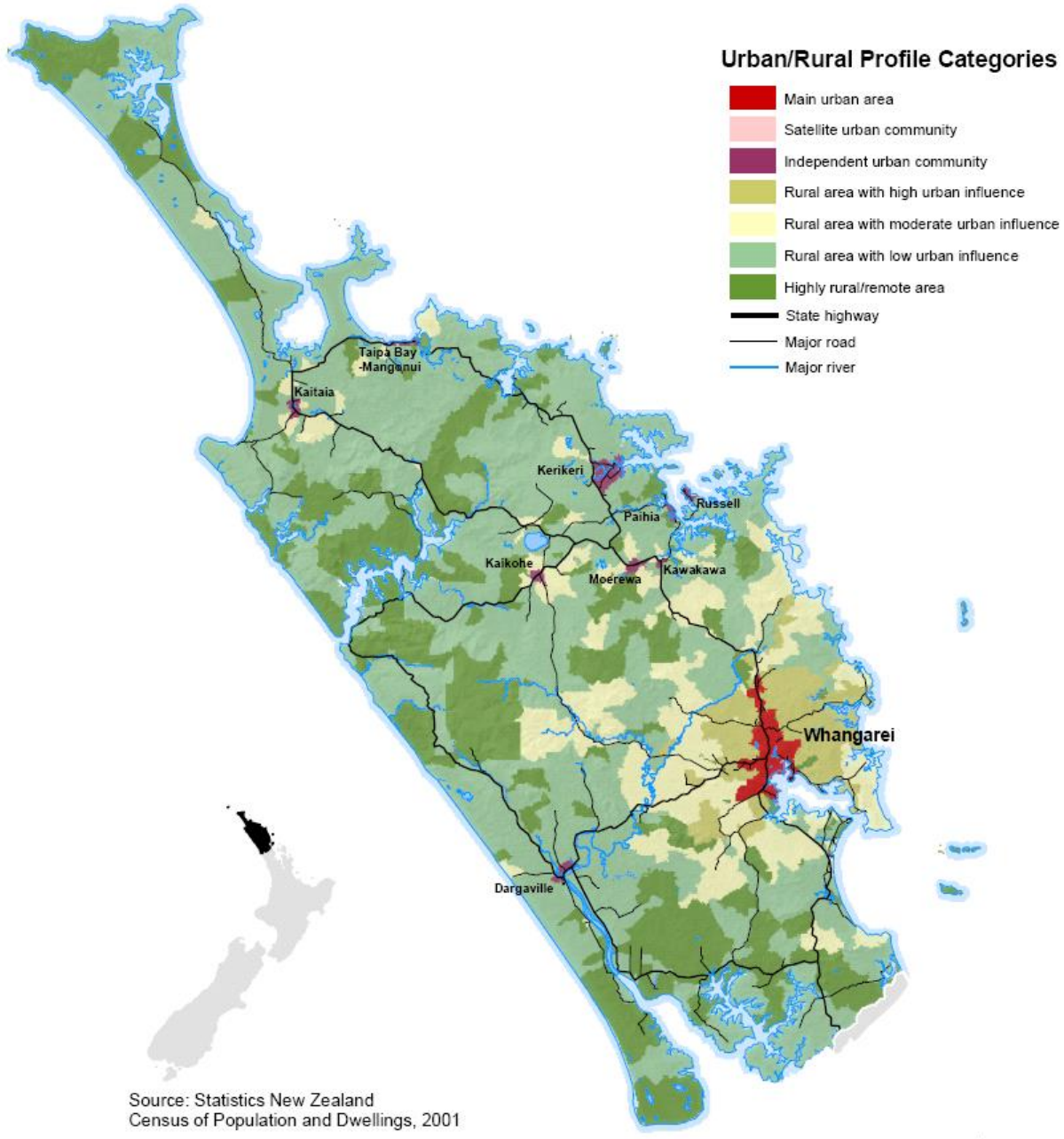

Figure 1. *The Northland area of NECBOP*

- Maungaturoto has a reticulated council-operated sewerage scheme, serving approximately 450 sites.
- Kaiwaka has a reticulated council-operated sewerage scheme, serving approximately 160 houses.
- Te Kopuru has a reticulated council-operated sewerage scheme.
- Glinks Gully has a council-operated scheme serving 23 houses, that pumps the effluent from individual houses' septic tanks to a disposal area.

Whangarei District Council

- The Whangarei District Council owns and operates wastewater schemes serving the communities of:
    - Whangarei, part of Whangarei Heads, Hikurangi, Ruataka, Waipu, Waipu Cove, Langs Beach, Portland, Ngunguru, Tutkaka, Oakura, and Waiotira.
- The Whangarei District Council identify a further 142 community wastewater systems in the region.[3] Organisation types that own the supplies include: schools, accommodation premises, food premises, industrial/commercial premises, marae, halls, recreational/cultural facilities, private individuals, and retirement homes.

On-site sewerage systems

In areas not serviced by reticulated systems, wastewater disposal is primarily by means of septic tanks owned by individual households. There are also properties that still use long drop toilets. Some properties use aerated water treatment systems (AWTS),[4] where conditions are unsuitable for conventional septics, and a new development in the area has been the locally developed E-Bin system,[5] which is an on-site wastewater disposal system that has many of the advantages of aerated systems, but no requirement for electricity. The Far North District Council estimates that private wastewater disposal systems account for approximately 50 percent of the properties in the district.[6]

Interviewees and Council documents identify a number of issues with on-site wastewater disposal.

- In a number of areas in the Far North, private wastewater systems are failing, due in some cases to inadequate maintenance, and in other cases to the installed system being inappropriate for the section size and ground conditions.[6] Pollution of waterways due to failed systems is an important issue for the Far North District Council, and in mid 2006 the Council implemented a certification process for private wastewater disposal systems.

[3] Whangarei District Council Community Plan, 2006-2016. Available: http://www.wdc.govt.nz/customerservice/?lc=links&id=516&LTL=l1

[4] Aerated water treatment systems are used for on-site sewage treatment. They are capable of treating the wastewater to a high standard through the use of aerobic bacterial slimes. The wastewater produced by the system is suitable for drip line irrigation onto land. Aerated systems require electricity to drive the components that supply oxygen to the aerobic bacteria.

[5] E-Bin Distributions Ltd, Paihia.

[6] Far North Future Plan (LTCCP), 2006-2016. Available: http://www.fndc.govt.nz/ltccp/fnfp/index.asp

- In the Whangarei District, non-reticulated coastal settlements are experiencing high growth, and demand for 600-800 square metre sections, which are insufficiently sized for conventional septic systems.[7]
- Septic tank systems vary in quality, from well constructed systems, to hand-built systems that break down. Failed systems have led to some insanitary practices such as wastewater drainage via open trenches running through gardens and beside roads.
- Marae have highly variable populations, for example, sudden influxes of large numbers of people for hui. This can result in overloading and subsequent failure of on-site sewerage systems.

3.1.3. Drinking water

The following information is sourced from a combination of interview responses, data held in the New Zealand Drinking Water Register, [8] and the district councils' long term council community plans.

Reticulated Supplies:

Far North District Council

- The Far North District Council currently manages nine public water supply systems, of which eight are potable (safe to drink) supplies, and one, at Russell, is used only for emergency fire fighting. The eight potable supplies serve the communities of:
    - Moerewa/Kawakawa
    - Kaikohe
    - Okaihau
    - Omapere/Opononi
    - Paihia/Waitangi
    - Kaitaia
    - Kerikeri
    - Rawene
- The council-run supplies serve a total resident population of around 22,000 people, rising to 31,000 people in the summer tourist season. Populations served by each supply range in size from around 120 to 5400 people.
- Far North District Council estimate that around 34,000 people obtain their water from non-council supplies, most through their own rooftop rainwater collection, but some through non-council-owned reticulated supplies.[9]
- The New Zealand Drinking Water register identifies 159 non-Council-owned community supplies in the Far North district. Most serve between 30 and 200 people, although there are a small number of larger supplies, the largest a privately owned supply, serving 2000 people in Mangonui. Organisation types owning the supplies include community groups, marae, schools, campgrounds, private companies, and individuals.

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[7] Whangarei District Council Community Plan, 2006-2016. Available: http://www.wdc.govt.nz/customerservice/?lc=links&id=516&LTL=l1

[8] http://www.drinkingwater.co.nz/supplies/Suppliescompliance.asp This is a register of all drinking-water supplies serving more than 25 people for more than 60 days a year

[9] Far North Future Plan (LTCCP), 2006-2016. Available: http://www.fndc.govt.nz/ltccp/fnfp/index.asp

Kaipara District Council

- Dargaville (including Bayly's Beach) has a Council operated supply, sourced from streams and rivers, serving 5200 people.
- Maungaturoto has a Council-operated supply, sourced from streams, serving 980 people.
- Ruawai has a Council-operated supply, sourced from three bores, serving 600 people.
- Glinks Gully has a Council-operated supply, sourced from groundwater-fed springs, and serving 50 people.
- A further 46 supplies in the Kaipara district are identified in the New Zealand Drinking Water Register. Each serves between 30 and 200 people. Organisation types that own the supplies include community groups, schools, marae, camping grounds, and the Department of Conservation.

Whangarei District Council

- The Whangarei District Council currently manages public water supply systems serving communities of:
    - Whangarei, Poroti, and Hikurangi (56,530 people)
    - Bream Bay, including Ruakaka, Waipu, Waipu Cove, and Langs Beach (around 6,000 people)
    - Mangapai (92 people)
    - Maungakaramea (200 people)
    - Portland.
- The Whangarei District Council identify a further 113 community drinking water supplies in the region, of which 58 are included in the New Zealand Drinking Water Register. [10] Organisation types owning the supplies include: schools, accommodation premises, food premises, industrial/commercial premises, marae, halls, recreational or cultural facilities, private individuals, and retirement homes.

Issues facing reticulated drinking water supplies

The non-Council-owned community drinking water supplies have varying levels of treatment, and some have no treatment. Most are not currently able to demonstrate compliance with the New Zealand Drinking Water Standards. Some Council-owned systems are also in need of an upgrade to comply with the standards.

Non-reticulated drinking water supplies

Drinking water in non-reticulated areas is usually collected from dwelling roofs. There are also properties that collect their water from private boreholes, springs, or streams.

Interviewees and Council documents identify a number of issues with private water systems.

- Shortages during summer months can require tanker-delivered top-ups. Some areas in Northland receive a lot of rain, making water shortages less likely, but other areas receive less rain. Leaky spouting and tanks can compromise individual households' sufficiency of supply even in areas with high rainfall.

[10] Whangarei District Council Community Plan, 2006-2016. Available: http://www.wdc.govt.nz/customerservice/?lc=links&id=516&LTL=l1

- Water quality issues can result from wildlife contamination of rooftop collection areas, and contamination of bores and streams from a variety of sources including organic and chemical pollutants. The supplies may not be monitored sufficiently to detect the contamination.

3.1.4. Electricity

Reticulated Supply

Within the Northland region, Top Energy operates the lines in the district covered by the Far North District Council, and Northpower operates the lines in the districts covered by the Whangarei and Kaipara District Councils.

Electricity reticulation is significantly more extensive than water reticulation. However interviewees said that there are still communities without access to reticulated power: in particular, remote Maori communities on the east coast of Northland. One interviewee stated that roughly 80 percent of houses in the Te Rarawa rohe are connected to the national grid. The other 20 percent rely on solar power, diesel and petrol generators. Some small community-run micro-hydro schemes exist in Northland. Lamps and candles can be used for lighting in houses without electricity, with high-risk consequences.

There are also some problems with the dilapidated condition of wiring in houses that have electricity supply. This poses a fire risk.

3.1.5. Poorly serviced areas

Interviewees said that houses in the more remote areas tend to have poorer access to services. There are also problems with wastewater in specific areas due to the use of inappropriate systems for the conditions. Areas mentioned specifically were:

- Moerewa floods often, and properties rely largely on conventional septic systems for sewage disposal. Flooding results in contamination of the surface water with sewage. Nevertheless, there is significant ratepayer resistance to paying the costs of installation of reticulated sewerage (possibly affected by their experience of high and ongoing costs associated with the drinking water reticulation that has been installed in the town). The Far North District Council are planning to install a reticulated sewerage system at Moerewa, with support from the Ministry of Health's Sanitary Works Subsidy Scheme.[11]
- Te Hapua has major problems with septic tank systems. Systems are malfunctioning because they are old, or an inappropriate design for the poorly draining soil conditions.
- Remote Maori communities still have significant numbers of houses without electricity

[11] Far North Future Plan (LTCCP), 2006-2016. Available: http://www.fndc.govt.nz/ltccp/fnfp/index.asp

3.2. East Cape

The area of the East Cape that is designated as within NECBOP is shown in Figure 2. This area is limited to the region within the boundaries of the Gisborne District Council.

3.2.1. Local authorities

The Gisborne area has a unitary authority: the Gisborne District Council.

3.2.2. Sewerage

Reticulated supplies:

There are two Gisborne District Council-owned reticulated sewerage systems in the East Cape.

- Gisborne city has a reticulated system that served 13,637 properties in 2005/06. This system is not currently extended to any outlying areas, but work in-progress is examining the possibility of extending it to the nearby areas of Wainui, Makaraka and Sponge Bay.[12]
- Te Karaka, inland to the west of Gisborne, has a council-owned reticulated system that served 168 properties in 2005/06. Not all properties in the township have access to the supply, and some have chosen not to connect because of the cost.

One other reticulated sewerage system exists in the region.

- Ngati Porou Hauora at Te Puia Springs owns a reticulated system that serves the hospital, the hotel, and a few houses. Most houses in Te Puia Springs are not connected as they are below the level of the sewer, so connection would require pumping of their sewage upwards.

On-site sewerage systems

In areas not serviced by reticulated systems, wastewater disposal is primarily by means of conventional septic tanks owned by individual households. A smaller number of households use the more modern aerated water treatment systems (AWTS), now required in some circumstances to meet environmental regulations (see section 4.2.1). A few older homes are served by long drop toilets only, and some have both a septic system and a long drop to allow conservation of water through use of the long drop. A very small number of houses use composting toilets (estimated by one interviewee at less than five houses in the area).

Problems with on-site sewage disposal systems were identified, particularly in relation to septic systems with inadequate drainage, resulting in the leaching of untreated waste into ground water. A further problem was identified with older septic systems that drain into soak holes instead of a soakage field, posing a heath and safety risk (for example, a child could fall into the hole).

[12] Gisborne District Council Community Plan, 2006-2016

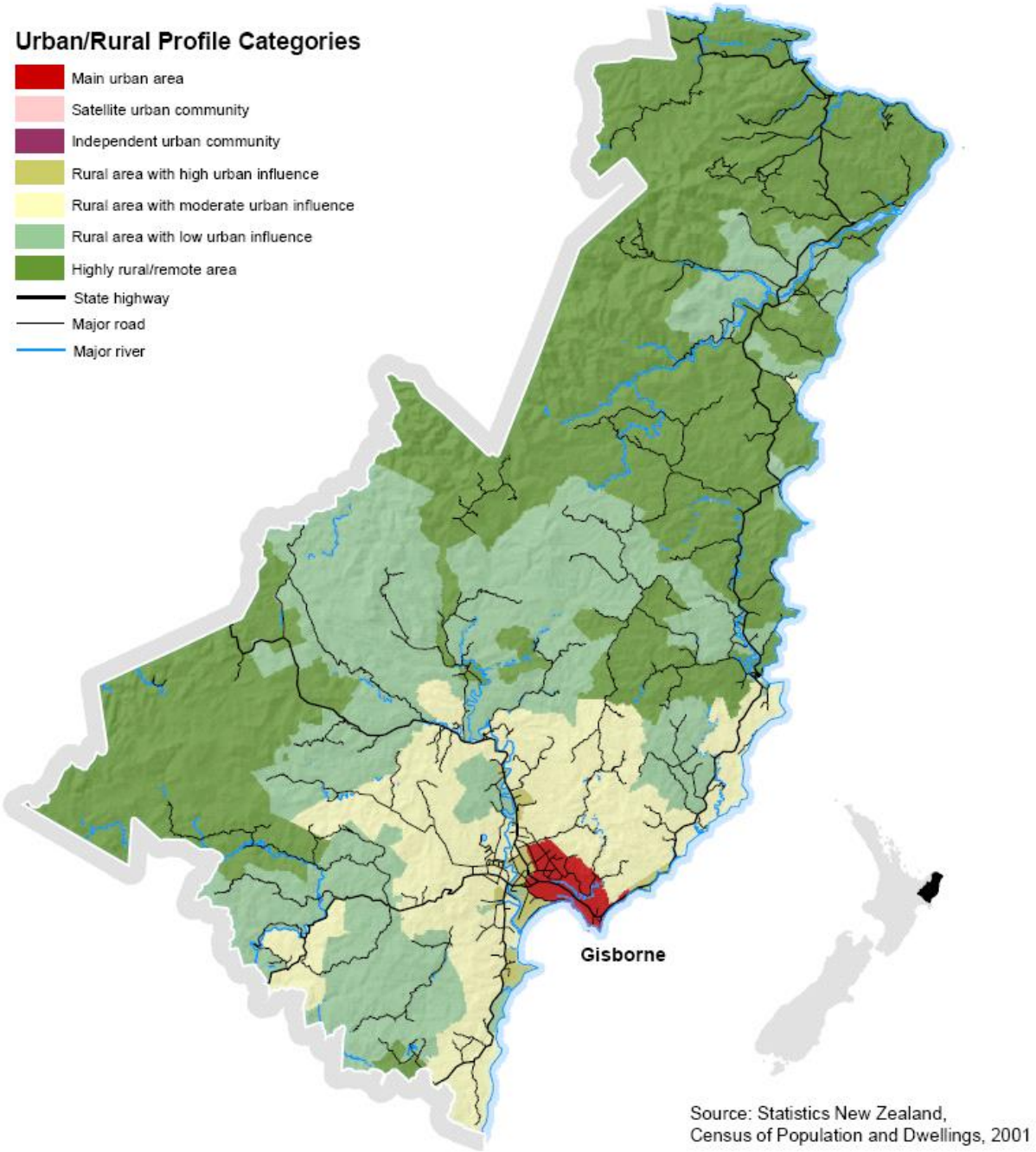

Figure 2. *The East Cape area of NECBOP*

3.2.3. Drinking water

Reticulated Supplies

The following information is sourced from a combination of interview responses and data held in the New Zealand Drinking Water Register.

Gisborne District Council

- Gisborne City has a Council-owned drinking water supply, sourced from the Waipaoa river, and servicing 30,000 people. The main pipeline also runs through the small communities of Manutuke and Makaraka, whose residents have the option of connecting if they wish.
- Te Karaka and Whatatutu have top-up reticulated supplies. Households are primarily reliant on rooftop supplies, but most are also connected to a supplementary low pressure supply that tops up water tanks to a maximum of 1 cubic metre per day. The top up supply serves 123 people in Whatatutu, and 502 people in Te Karaka.[13]

Non-council-owned reticulated supplies

- Te Puia Springs has a reticulated supply sourced from the Waikawa Creek. The supply is owned by the Ngati Porou Hauora and is primarily intended to serve the hospital. It also supplies water to a number of local households.
- The NZ Drinking Water Register lists a further 58 supplies in the district, servicing between 10 and 300 people, owned by schools, camping grounds and marae.

Issues facing reticulated drinking water supplies

The Te Karaka and Whatatutu supplies are of low quality (graded unacceptable according to the drinking water standards),[13] and interviewees said that some residents choose not to connect because of the quality issues. Gisborne District Council figures show that, of households that are able to connect to the supply, around 20% in Te Karaka and 30% in Whatatutu, are not connected. However, an upgrade of the supply is felt by the communities to be unaffordable.[13]

The Te Puia Springs water infrastructure is old, and was installed originally to secure a supply for the hospital. Over time, more dwellings in the community have connected to the supply, increasing the demand. The supply also has problems with turbidity in heavy rain situations.[13] The Hauora is looking at options for upgrading the system.

Non-reticulated drinking water supplies

Supplies for individual households are most commonly sourced from rooftop rain water collection. A number of households also purchase tanker-delivered water in the summer to top up their inadequate rooftop supply.

In addition to concerns over contamination of rooftop supplies, there are problems with an insufficiency of supply. Households that cannot afford tanker deliveries in summer run out of water, and practices such as river bathing and collecting drinking water in containers from the local river are not uncommon. These practices are associated with risks of gastro-enteric

[13] Gisborne District Council Community Plan, 2006-2016

and skin disease. In addition, the tanker-supplied water is of variable quality, with some supplies coming from unprotected and untreated sources. People who need to access tanker-supplied water have little choice in their supply.

Some households with rooftop supplies face problems with an insufficiency of water even in winter, due to poor repair of tanks or spouting, or insufficiently sized tanks for large families.

3.2.4. Electricity

Reticulated Supply

The lines company supplying electricity to the East Cape is Eastland Network Limited. The region supplied by Eastland Network is shown in the map to the right (reproduced from http://www.eastland.co.nz/Network/About-ENL/default.asp). In addition to the electricity supply sourced from the national grid, back-up diesel generators are located in Te Araroa, Ruatoria, Tolaga Bay, Puha, matawhero, and Mahia, to provide security of supply to these areas during maintenance, when there is a Transpower transmission constraint, when electricity spot prices are high, or at peak times, when demand is high and supply limited.[14]

Electricity reticulation is significantly more extensive than water reticulation, and interviewees stated that only a small number of houses are so far from the lines that they cannot access the reticulated supply.

Although the extent of the electricity reticulation is comparatively good, there are problems with the capacity of the lines. The supply into the region is becoming constrained at peak periods. A 2004 assessment determined that within a reasonably short time, either another transmission line into the region will need to be built, or supply or demand restriction initiatives will need to be instigated.[14] The northern parts of the East Cape face particular problems with reliability of supply, but even Gisborne city was said to be on the brink of brown-outs at peak times.

A further problem identified by interviewees is that electricity charges for households in the East Cape are among the highest in the country. It was reported that some elderly people are bed-ridden during winter, because it is the only way to stay warm when they cannot afford to run a heater. In addition, while most homes have access to electricity, some do not have facilities to use the electricity, for example, they may not have hot water cylinders.

There are several research initiatives that are examining options for distributed power generation in the region. Generating electricity close to where it is needed would defer or eliminate the need for new lines.[14]

[14] Tairawhiti Development Taskforce (2004) Tairawhiti regional Assessment. Available: http://www.wairoadc.govt.nz/documents/tairawhitienergyassessm.pdf

3.2.5. Poorly serviced areas

Interviewees said that communities experiencing the worst problems with drinking water supply, sewage disposal and electricity tended to be in the more remote northern areas of the East Cape. There are also difficulties experienced inland, in communities to the west of Gisborne city.

Tolaga Bay and Ruatoria were identified as towns facing particular infrastructural problems. Neither have reticulated drinking water or sewerage, and both are now too big for their existing on-site systems to be adequate. In Tolaga Bay[15] and Ruatoria[16] 25% and 30% of sections, respectively, are under 1000 square metres. This makes them undersized for the conventional septic systems they use, according to Council guidelines. In addition, interviewees identified problems with high groundwater, poorly draining soils, and insufficient maintenance, that have led to wastewater system failure. Ruatoria and Tolaga Bay households also face problems with an insufficiency of drinking water supply in summer.

3.3. Eastern Bay of Plenty

The area of the Eastern Bay of Plenty that is designated as within NECBOP is shown in Figure 3. This area is limited to the areas within the boundaries of the Opotiki District Council and the Whakatane District Council.

3.3.1 Local authorities

The district councils within this region are Opotiki District Council, and Whakatane District Council.

The regional council is Environment Bay of Plenty.

3.3.2. Sewerage

Reticulated supplies

There are eight district council-owned reticulated sewerage systems in the eastern Bay of Plenty.

Opotiki District Council

- Opotiki township has a reticulated council-operated sewerage scheme servicing 1518 properties in 2005/06.[17]
- Waihau Bay has a small council-operated scheme, consisting of a larger septic system that collects and treats the effluent from individual properties' septic tanks.

Whakatane District Council

- The Council owns wastewater systems in Whakatane, Ohope, Edgecumbe, Taneatua, Murupara and Te Mahoe.[18]

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[15] Gisborne District Council (2005) Tolaga Bay Three Waters Assessment
[16] Gisborne District Council (2005) Ruatoria Three Waters Assessment
[17] Opotiki District Council Annual Report 2005/2006
[18] Whakatane District Council Long Term Council Community Plan, 2006-2016

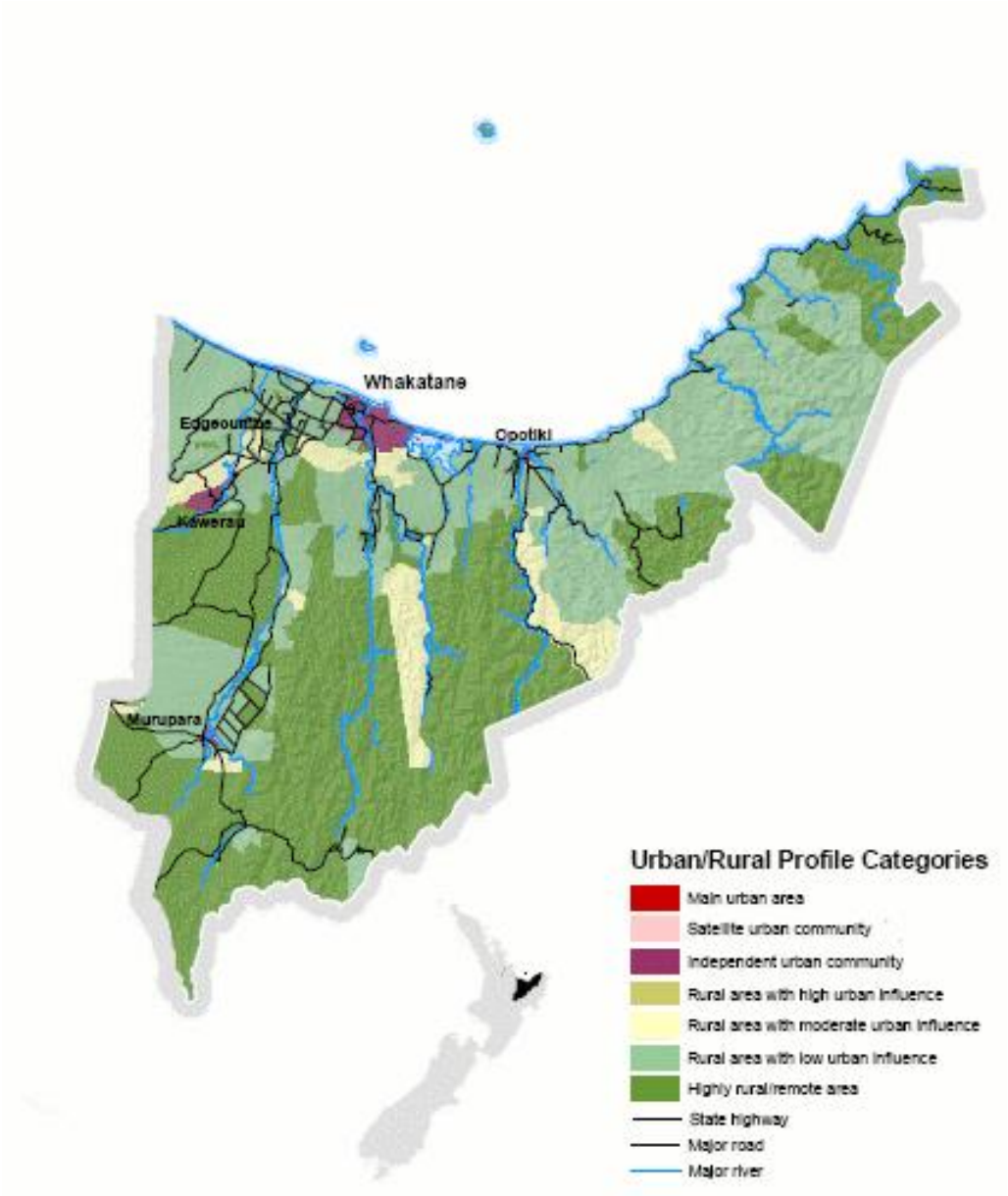

Figure 3. *The Eastern Bay of Plenty area of NECBOP*

(modified from Statistics New Zealand, Census of Population and Dwellings, 2001)

Reticulated sewerage is limited to quite specific areas. For example, while Whakatane township has reticulated sewerage, the small satellite communities of Paroa, Pahou and Poroporo, all less than five kilometres from Whakatane, are not reticulated.

On-site sewerage systems

In areas not serviced by district council-owned reticulation, wastewater disposal is primarily by means of conventional septic tanks owned by individual households. A smaller number of households use more modern aerated water treatment systems (AWTS), now required in some circumstances to meet environmental regulations (see section 4.2.1). One interviewee estimated that there are around 1500 households using septic or AWTS systems in the Opotiki district. A few households are serviced by long drop toilets (estimated by the interviewee at around 20-30 houses in the Opotiki district). A very small number of houses use composting toilets and/or greywater systems (estimated by the interviewee at less than five houses in the Opotiki district).

Interviewees felt that there were significant problems with on-site sewage disposal systems, particularly in relation to malfunctioning septic and aerated water treatment systems. These have resulted in the leaching of untreated waste into drinking water supplies, creating health risks for the communities using those supplies. Aerated systems, in particular, were singled out as prone to failure. Because of their requirement for constant power, they are unsuitable for the local conditions of unreliable electricity supply (section 3.3.4), and their running costs are too expensive for low income households.

3.3.3. Drinking water

Reticulated Supplies

The following information is sourced from a combination of interview responses and data held in the New Zealand Drinking Water Register.

Opotiki District Council

- Opotiki township has a Council operated supply, sourced from bores and the Otara Dam, servicing 5100 people.
- Ohiwa has a Council-operated supply sourced from a bore, servicing a population of 240.
- Te Kaha has a Council operated supply, servicing 410 people, sourced from the Puremutahuri creek.
- A further 18 non-council-owned supplies in the Opotiki district are identified in the New Zealand Drinking Water Register. Each serves between 30 and 200 people. Organisation types that own the supplies include community groups, schools, and motor camps.
- Interview responses suggested that there are many more non-council-owned reticulated supplies, too small to be required to register on the NZ Drinking Water Register. One interviewee estimated the presence of 80-100 privately owned reticulated supplies, defining them as those that serve three or more developments. This includes supplies serving marae, schools, subdivisions, and papakainga.

Whakatane District Council

- Whakatane town and Ohope have a Council-owned supply, sourced from the Whakatane river, and servicing 21,020 people.

- The Council-owned Rangitaiki Plains supply services 3630 people in Edgecumbe, Onepu, Te Teko, and Thornton. It is sourced from a two bores and two springs that were originally separate, but have now been reticulated together.
- Murupara has a council-owned supply, sourced from a bore, and servicing 2060 people.
- Ruatoki has a council-owned supply, sourced from a well next to the Whakatane river, servicing 1890 people.
- Taneatua has a Council-owned supply, sourced from a bore, and servicing 790 people.
- Matata has a Council-owned supply, sourced from a spring, and servicing 690 people.
- Ruatahuna Village has a Council-owned supply, sourced from a spring, and servicing 300 people.
- Waimana has a Council-owned supply, sourced from a bore, and servicing 160 people.
- Te Mahoe has a Council-owned supply, sourced from a bore, and servicing approximately 90 people. Until recently Te Mahoe's supply was owned by Mighty River Power. The community and the Whakatane District Council have been working with Housing New Zealand and the Ministry of Health to overcome the significant water quality issues inherited with this supply. See section 5.3.2 for more information on this development.
- The New Zealand Drinking Water Register lists a further 11 supplies in the district, servicing between 40 and 400 people, owned by schools, camping grounds, and other private sector organisations.

Issues facing reticulated drinking water supplies

Interviewees identified some significant issues facing the reticulated drinking water supplies in the region:

- Interviewees stated that the majority of community-owned drinking water supplies have an unsatisfactory quality rating under the new drinking water standards. The community supplies listed on the Drinking Water Register are labelled as ungraded.
- Some council-owned supplies also face difficulties meeting the 2005 Drinking Water Standards. One example among several is the Rangitaiki Plains supply, which contains slightly higher than permitted levels of arsenic. Councils anticipate that significant expenditure (and ensuing rates increases) will be required to upgrade these supplies.

Non-reticulated drinking water supplies

Supplies for individual households are most commonly sourced from rooftop rain water collection. One interviewee estimated that around 1200 houses in the Opotiki district use rooftop supplies.

Rooftop supplies can face contamination issues. Unlike community supplies, individual supplies are not monitored for compliance with the Drinking Water Standards. However interviewees stated that many are of a standard that would not comply. UV sterilisation of the water can be required to bring it up to standard, but these systems have the disadvantage of increasing the house's electricity bill.

3.3.4. Electricity

Reticulated Supply

The lines company supplying electricity to the eastern Bay of Plenty is Horizon Energy. The area supplied by Horizon extends east along the coast from Paengaroa (near Te Puke), and south as far as Murupara. By and large, rural supply is limited to areas close to the state highways. Electricity reticulation is significantly more extensive than water reticulation, and interviewees stated that only a small number of houses are so far from the lines that they cannot access the reticulated supply.

Although the extent of the electricity reticulation is comparatively good, there are problems with the reliability of the supply. Interviewees said that multi-day outages are not uncommon in the more remote areas. These outages can impact on other services too, as power is required to run aerated wastewater treatment systems and pumps for drinking water.

3.1.5. Poorly serviced areas

Interviewees said that communities experiencing the worst problems with infrastructure tended to be those in the more remote areas, the farthest away from main centres. Communities identified by interviewees as facing particular difficulties were Ruatahuna, Kaingaroa, and Minginui in the south, and areas at the eastern end of the coast such as Te Kaha.

3.4. Impacts of substandard infrastructure

Many rural households in NECBOP are dealing with significantly worse infrastructural conditions than households located near a main urban centre in New Zealand could expect to face.

These conditions have a number of negative consequences for the households and communities that are dealing with them.

- Enteric disease is a well known risk associated with contaminated drinking water. However, people who regularly drink contaminated water often suggest that they have built up an immunity to the germs. Summarised information from the Ministry of Health suggests that this complacency may be misplaced.[19]
    - New Zealand has one of the highest rates internationally of the enteric diseases: campylobacteriosis, cryptosporidiosis, and giardiasis.
    - It is estimated that only between 5 percent and 30 percent of enteric illnesses are reported in New Zealand. This is primarily because people with symptoms do not visit the doctor. In some areas the number who visit doctors is as low as 5 percent. Even when a doctor is seen, the cause may not be identified, and suspicion often falls on food as the cause, without an investigation to confirm whether or not this is the case.

[19] Ministry of Health (2006) Drinking-water Assistance Programme Criteria for Capital Assistance for Small Drinking-water Supplies: a discussion paper http://www.moh.govt.nz/moh.nsf/pagesmh/4808/$File/drinking-water-assistance-programme.doc

- In 2001, 306 cases of enteric disease were linked to contaminated drinking water as the most likely cause. Given the issues with under-reporting, the actual number of cases could have been over 3000.
- A 2004 study by the Institute of Environmental and Scientific Research found a correlation between poor quality community water supplies and rates of illness in the communities.
- The Ministry of Health estimates that water borne disease costs the New Zealand economy around $15 million a year. In addition, they point out that New Zealand is lucky that the outbreaks of water-borne disease so far have mostly been caused by organisms that are not virulent enough to cause fatalities.

- Wound infection is a risk with river bathing; this practice is undertaken when water supply is insufficient in summer. As part of the community consultation around the Te Puia Springs three waters assessment, doctors at Te Puia hospital identified that major risks resulted from the infection and non-treatment of cuts and sores obtained while bathing in streams.[20]
- Inadequate wastewater treatment poses both environmental and health risks.
  - Effluent from malfunctioning septic systems can contaminate waterways, and can pose particular health risks when the waterway is also used as a drinking water supply.
  - Cases where blocked septic tank drainage fields have been replaced with open trenches pose a health risk to anyone who may come in contact with the effluent draining into the trenches. Children may be at particular risk.
  - Soak holes are a safety risk.
- A lack of electricity supply is associated with several health and safety risks.
  - Fire risk from the use of open flames for lighting.
  - Scald risk from the practice of carrying water heated on a stove to the bathtub.
  - Health problems, particularly respiratory illnesses, are associated with inadequately heated homes.
- Interviewees gave several examples of the negative effects that poor infrastructure can have on business development.
  - Contaminated drinking water supplies can adversely affect tourism if tourists who enter the area are likely to get sick.
  - Contaminated water is a problem for producers of food products. These producers need to upgrade their water supply to alleviate the health risk to consumers.
  - Inadequate electricity supply can prevent local business development and act as a disincentive to industry investment in the area.
- Many interviewees mentioned the negative psychological impacts that inadequate infrastructure can have. They felt that poor infrastructure can create conditions in which people are left with little energy to sort out other aspects of their lives. One interviewee said:

[20] Gisborne District Council (2005) Te Puia Springs Three Waters Assessment

"I think when people have those things sorted, then they can be looking at other aspects of their lives and what they might want to do. But it's you know, it's pretty hard to do that, I mean, if you're dealing with not even having the very basics of water and waste disposal."

3.5. Key points from this section

This section has provided an overview of the water supply, electricity supply, and sewage disposal systems in use in Northland, the eastern Bay of Plenty, and the East Cape. It has also described issues facing these essential services, and the impacts of inadequate services. The major findings are summarised below.

- Northland, the eastern Bay of Plenty, and the East Cape face very similar circumstances with respect to their essential services.
- District council-owned drinking water and wastewater reticulation is mostly restricted to main townships. There are also a number of small, non-council-owned reticulated drinking water supplies.
- Reticulated drinking water supplies are variable in quality. Some are compliant with the 2005 New Zealand Drinking Water Standards, while others are graded unacceptable according to these standards.
- Dwellings that are not connected to reticulated water and wastewater supplies use primarily septic tank systems for wastewater treatment, and rooftop water collection for drinking water supplies.
- Electricity reticulation is much more extensive than water reticulation. The great majority of rural NECBOP houses are able to connect to the national grid. However, some very remote houses and communities lack reticulated electricity.
- Problems are being experienced with the capacity of the electricity distribution infrastructure and the reliability of the electricity supply, especially in the more remote areas of NECBOP. The cost of electricity supply was also raised as an issue.
- Problems are experienced with septic systems failing due to their age, inadequate maintenance, or their inappropriate design for the conditions in which they are placed. This has resulted in insanitary conditions such as the leaching of untreated sewage into waterways and, in some cases, homeowners digging open trenches to replace failed septic tank soakage fields.
- Problems are experienced with contamination and inadequacy of rooftop-collected drinking water supplies. Inadequacy of supply can result from the dry summer conditions experienced in some areas of NECBOP, or from under-sized or leaking water tanks or spouting.
- In general, interviewees felt that the worst problems with infrastructure were experienced in the most remote areas in their region.
- Many households in rural NECBOP face significantly worse infrastructural conditions than households located near main urban centres in New Zealand. These conditions have negative consequences for inhabitants, including:
    - health risks such as contracting gastro-enteric disease from contaminated water supplies, and developing wound infections from river bathing
    - health and safety risks resulting from a lack of electricity supply, such as fire and burn risks, and poor health from inadequate home heating

- detrimental effects on business development
- negative psychological impacts for householders.

4. Barriers to the supply of essential services

A number of barriers to the supply of essential services were identified by interviewees. These related both to reticulated and on-site infrastructure.

4.1. The condition of existing infrastructure and housing

There are problems with the existing infrastructure and housing that form barriers to households accessing adequate services. On-site and reticulated systems can be old, of poor quality, inadequately maintained, inappropriate design, or under-sized for households they are serving.

4.1.1. Problems with existing on-site infrastructure

- Many septic systems were installed 40 or more years ago and are getting old and failing. Furthermore, these systems were often built to the standards of the time, but are not compliant with the current New Zealand wastewater standards.
- Households using rain water as their supply can run out of water in summer in areas of the East Cape and eastern Bay of Plenty, due to the dry climate. This is exacerbated by inadequately sized roof-water collection tanks and poor repair of spouting. Some cases were also reported of households running out of water in winter due to leaking collection tanks and poor spouting.
- Overcrowding of houses places extra pressure on on-site wastewater and drinking water systems. For example, a standard sized (22,500 litre) roof-water collection tank holds insufficient water for a family with nine or more children.
- Some systems are an inappropriate design for the dwelling they are serving, e.g. aerated wastewater systems that have running costs that are unaffordable for low income families, and septic systems that cannot cope with sudden increases in load when a large number of visitors arrive.
- Basic maintenance and repair has been neglected. For example, poor repair of spouting can lead to insufficient roof-water collection, and many cases were mentioned of septic tanks failing through not being cleared of sludge.
- Some dwellings' infrastructure has never been upgraded to modern standards, for example, dwellings with long drop toilets, and dwellings that lack running hot water.

4.1.2. Problems with existing reticulated infrastructure

- Some Council-owned reticulated drinking water and sewerage systems have not been upgraded for many years and will face difficulties in meeting new mandatory standards, in particular the 2005 NZ drinking water standards.[21]
- Some communities that could benefit from installation of reticulated drinking water and sewerage systems are still reliant on on-site systems. Two examples are Tolaga Bay and

[21] The Health (Drinking Water) Amendment Bill proposes legislative changes to require drinking-water suppliers to take all practicable steps to ensure they provide a supply that complies with the New Zealand Drinking-Water Standards. The bill is currently before the Health Select Committee. More information is available at: http://www.moh.govt.nz/moh.nsf/f872666357c511eb4c25666d000c8888/7b0ed97145c8f73dcc256e27006e1053?OpenDocument

Ruatoria, which are fairly large settlements[22] containing sections that are too small to allow adequately sized septic tank soakage fields.

- While reticulated electricity is currently available to the great majority of households in NECBOP, the capacity of the distribution infrastructure is stretched. Interviewees across NECBOP reported frequent power cuts that can sometimes last for several days. Comparison of the NECBOP power companies' reported outages data shows a system average interruption duration index (SAIDI) figures that are in most cases significantly higher (and in some cases several times higher) than the national average.[23] In the East Cape, interviewees said that owners of newly built homes often need to pay to upgrade transformers before power can be supplied.

The majority of the problems described above could have been reduced if systems had been upgraded or better maintained over time. But upgrade and maintenance have not been adequate. The following sections describe the factors that have formed barriers to the upgrade and maintenance of essential services.

4.2. Barriers to the upgrade and maintenance of on-site infrastructure

Individual home-owners are expected to take responsibility for the upgrade and maintenance of their on-site infrastructure. For low income rural households in NECBOP there are a number of factors that form barriers to upgrading and maintaining on-site infrastructure. Figure 4 outlines these barriers, and each barrier is discussed in more detail below.

4.2.1. Affordability

Affordability forms a major barrier to low income households upgrading and maintaining on site systems. Several factors contribute to this problem.

- On-site systems are expensive to purchase and install. Interviewees cited costs ranging from $7000 to $14,000 to purchase and install a basic septic system, and costs ranging from $16,000 to $30,000 to install an aerated septic system. Repairs and upgrades of failed and sub-standard systems can also be costly, for example, $3,000 to $5000 to install a trench soakage system to replace a failed trench system or soak hole. Examples were given of households that could not afford these costs developing their own solutions such as digging open trenches on their properties for septic tank effluent drainage.

[22] As of the 2001 census, Tolaga Bay had 276 households, and a usually resident population of 870. Ruatoria had 249 households, and a usually resident population of 840.
[23] National average SAIDI data presented in: Ministry of Economic Development (2006) New Zealand Energy Indicators. Available: http://www.med.govt.nz/upload/38611/new-zealand-energy-indicators-200608.pdf. Distribution companies' SAIDI data are available in their Asset Management Plans.

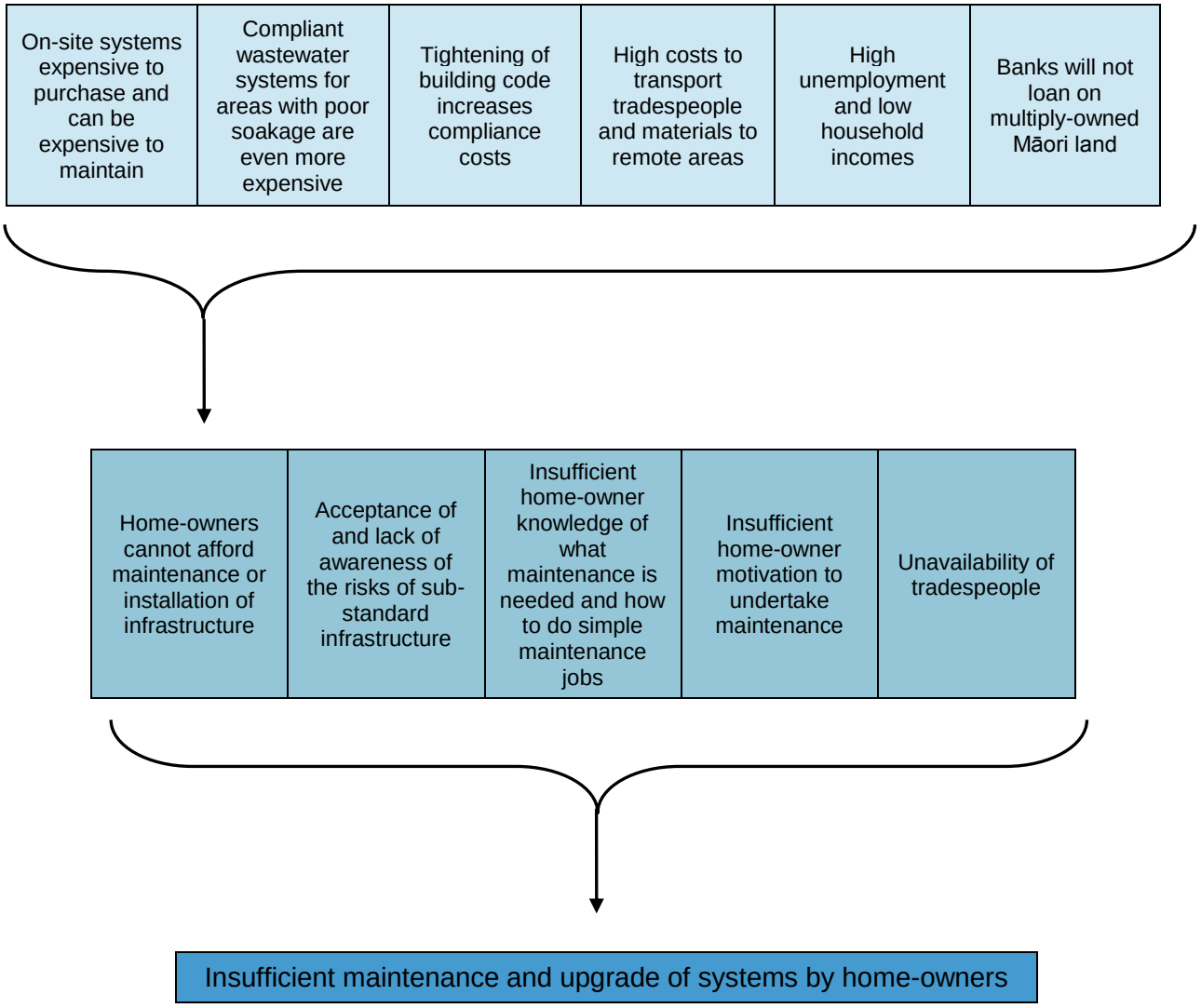

Figure 4. *Factors that contribute to the inadequate upgrade and maintenance of on-site household infrastructure.*

- Many of the rural communities in NECBOP are deprived. Interviewees stated that there are few employment opportunities, and data on rural NECBOP shows high levels of unemployment.[24] Many households are comprised of beneficiaries or grandparents bringing up their grandchildren. They have very little money for day-to-day living costs, and nothing to spare for the maintenance, repair, or upgrade of their infrastructure. While spending money on an upgrade may result in longer term household savings (for example, installing solar hot water heating to save on power bills), households do not have the money to pay the installation costs. Low incomes can form a barrier to even simple maintenance: while $250-$300 to clean out a septic tank may not seem like great deal of money, it is money that low income households struggle to find. Bank loans can be impossible to obtain for properties on multiply-owned Māori land, or for households with high pre-existing debt or poor credit ratings.
- Interviewees pointed to recent changes in legislation that have increased costs.
    - The most frequently mentioned problem was increases in costs associated with regional council requirements for on-site wastewater systems to comply with the Australian-New Zealand Standard (AS/NZS1547:2000) or the Auckland Regional Council's Technical Publication Number 58 (TP58) standards. Where previously standard designs were installed without consideration of site use or variability, councils now require testing of soils, and installation of aerated water treatment systems in situations where the soil has poor soakage, where there is insufficient room on the site for a soakage field, where the land gradient is too steep, or where particular environmental protection is required, such as on coastal sites. In a number of areas of NECBOP, heavy clay soils, underlying volcanic rock, and/or high groundwater in winter leads to poor soakage and activates a requirement for an aerated system. While many interviewees were supportive of the need for tighter regulation of on-site effluent disposal systems, the requirement for aerated systems has caused problems for low income households. The systems are not only more expensive to install than conventional septics (costs of $16,000 - $30,000 were cited), they are also associated with higher running costs as they need a constant supply of electricity and six monthly professional cleaning. Interviewees pointed to a high rate of failure of aerated systems installed for low income households, due to households turning off the power supply to the system in order to save on electricity costs. The relatively frequent long-lasting power cuts faced by remote areas in NECBOP are another factor that make aerated systems inappropriate. Councils are aware of the problems with aerated systems and they and Housing New Zealand are actively investigating alternatives.
    - Some interviewees stated that the recent tightening of building code requirements (associated with the Building Act, 2004) has increased the costs of both designing and building infrastructural systems, and that future changes are likely to result in further increases. [25] This related particularly to requirements that work be carried out by accredited professionals, and that building consent documentation meets a specific standard. Many were concerned that tightened standards will result in unsafe building work being done without consent in remote areas.

[24] Centre for Research, Evaluation and Social Assessment Ltd (2007) An assessment of the rural housing programme 2001-2005/06: a synthesis of evaluation findings.
[25] For information on these changes, see: http://www.dbh.govt.nz/blc-building-act

- The remoteness of rural NECBOP communities further increases the price of upgrading and maintaining on-site systems due to the distance over which tradespeople and materials must travel. Tradespeople tend to be located near larger urban centres, and they may have to travel several hours to get to some of the more remote areas. Some specific examples of this problem are:
    - one interviewee stated that while installation of a basic septic system in Gisborne would cost $7,000 - $9,000, you could expect to add around $4,000 to the cost for installing the same system in northern areas of the East Cape.
    - there is no good clean metal appropriate for septic system installation available locally in the East Cape, resulting in high costs for cartage of the metal from other areas.

4.2.2. Acceptance of sub-standard infrastructure

Many interviewees stated that there is a lack of knowledge of the health and safety risks associated with sub-standard or absent infrastructure. They also said that people tend to develop an acceptance of the sub-standard systems they live with. Some examples are:

- a frequently expressed sentiment among users of poor quality drinking water supplies that it is acceptable to drink because they have built up an immunity to the contamination
- a lack of knowledge or concern about practices that result in effluent contaminating waterways that are used for drinking water supplies
- families collecting drinking water from a stream that may be contaminated, and using it for drinking, tooth-brushing or washing without first boiling the water. Some will use cordial powder to disguise the unpleasant taste.

4.2.3. Insufficient knowledge about maintenance

A widespread comment was that householders lack knowledge about what maintenance needs to be undertaken, how to do simple maintenance, and how to use their systems sustainably. Specific examples cited were:

- clogged septic tanks from people pouring fat down the drains or using inappropriate soap powders
- a lack of knowledge of the need to clean out drinking water tanks
- a lack of knowledge about how to do simple maintenance tasks that can be carried out by home-owners.

4.2.4. Insufficient motivation to undertake maintenance

Several interviewees felt that a lack of home-owner motivation to undertake or spend money on maintenance was a problem. This is a particular problem for infrastructural repairs and upgrades, where the results of maintenance are not immediately visible. While insufficient motivation to carry out maintenance is not restricted to low income rural households, it is worth noting two factors that were identified as contributing to this problem in rural NECBOP.

- Depressed communities with high levels of inter-generational benefit dependency can be associated with apathy and despair among households and a greater tendency to accept substandard systems.

- Occupants of whanau-owned homes are expected to maintain the home for the time they are in it. However, this maintenance is not always done, because they don't feel it should be their (the current occupier's) responsibility alone. Over time, the neglect of maintenance can result in bigger problems that become too costly for successive occupants to fix.

4.2.5. Unavailability of tradespeople

Qualified tradespeople, engineers, and other consultants are concentrated in the larger centres, and interviewees said that it can be difficult to get them to travel to remote areas. This can increase costs (discussed above), but it can also cause delays because they are unwilling to travel to a remote area unless they have several jobs there. Interviewees said that some tradespeople have had experience with bad debtors and have become reluctant to travel to particular remote areas at all. There have also been some problems with fraudulent practices among tradespeople, exacerbated by householders' lack of choice of tradespeople.

4.3. Barriers to the installation of reticulated infrastructure

4.3.1. Water and wastewater reticulation

The larger reticulated services tend to be district council-owned and operated (see section 3). There are also a number of smaller-scale community-owned reticulated services, and some owned by institutions such as schools, hospitals, or marae, which allow nearby households to connect.

Reticulated infrastructure presents fewer maintenance problems for householders than on-site systems. It also can have lower up-front costs, for example, the Far North District Council has provided the following information on average costs for connection to a Council-owned reticulated wastewater system.[26]

- $3,000 average cost to lay pipework from house to sewer (60 metres of pipe at $50/metre).
- $1,000 to connect to the public sewer.
- $84 inspection fee.

This total of $4084 can be compared to the costs of $7,000 to $30,000 to install a septic system (section 4.2.1). However, it should be noted that while connection to a reticulated system tends to have lower up-front costs, the annual costs can be greater than those associated with on-site systems. A conventional (non-aerated) septic system will require cleaning every three years, at a cost of around $300 each time. Far North District Council sewerage rates are $572 per year.[26]

There are a number of small and medium-sized communities in NECBOP that could benefit from reticulated infrastructure. For example Ruatoria and Tolaga Bay in the East Cape have a significant proportion of properties that are considered too small to support on-site wastewater systems (see section 3.2.6). However, barriers to development and upgrade of reticulated infrastructure exist.

[26] Personal communication June 2007, Lars Fog, Utilities and Planning Development Manager, Far North District Council

- Many communities lack both the resources and the knowledge to develop their own reticulated systems.
- Interviewees identified a number of issues that deter Councils from developing, extending or upgrading reticulated services.
    - It is difficult to convince communities to accept new reticulated services and their associated increases in council rates. For example, Gisborne District Council community consultation has consistently met the response that communities do not want the Council to upgrade services due to the associated costs.[27] Examples were also given in interviews of affluent communities refusing reticulation schemes because they did not want to bear the associated rates increases.
    - District councils (particularly in the less populous areas of NECBOP) have few resources to spare to pay for either the capital or the depreciation on new assets. They face competing demands for the resources they do possess.
    - District councils collect no or only modest rates from multiply-owned Māori land, and therefore do not prioritise these communities for supply of services. Political factors discourage councils from subsidising one ward's developments with another ward's rates.

It is, however, worth noting that while fewer problems were reported with reticulated services as compared to on-site systems.

4.3.2. Electricity reticulation

Electricity reticulation in NECBOP is much more extensive than water or sewerage reticulation (see section 3), and interviewees reported that very few houses lack access to reticulated electricity.

Problems were, however, cited with the reticulated supply, namely:

- frequent power cuts that can last for several days
- high charges
- uncertainty over the future of electricity supply to remote areas, given that from 2013-onwards, lines companies will no longer be obliged to continue supplying power to places that they supplied in 1993 (subsection 6, clause 62 of the Electricity Act 1992). Remote, sparsely-populated areas are particularly at risk, given the greater difficulties lines companies face in making a return on the supply to these areas.

The major factor underlying all three problems is the low population density of remote areas in NECBOP. As compared to more densely populated areas, more infrastructure per household is required to deliver power, increasing costs per household, and decreasing lines companies' margins. Distribution companies are subject to a price path threshold, set by the commerce commission, that limits annual price increases to a rate at or below the annual change in the consumer price index (with an adjustment factor specific to each company)[28]. It

[27] Gisborne District Council Three Waters Assessments, 2005.
[28] Commerce Commission (2004) Regulation of Electricity Lines Businesses Targeted Control Regime Threshold Decisions (regulatory period beginning 2004) Available: http://www.comcom.govt.nz/IndustryRegulation/Electricity/ElectricityLinesBusinesses/TargetedControl/ContentFiles/Documents/Final%20Threshold%20Decisions%20Reissued%20with%20Gazette%20Notice%20(Regulatory%20Period%20Beginning%202004).PDF

was stated that lower margins on supplying service to remote areas results in lines companies cutting costs through minimising maintenance to these areas, and this can result in more frequent power cuts and longer periods of time elapsing before supply is re-connected. Severe weather events have also influenced the frequency of power cuts, e.g. storm damage in the Bay of Plenty in 2004/05 increased the frequency of outages in Horizon Energy's network (http://www.horizonenergy.net.nz).

As yet, it is unclear how the repeal of the obligation to continue supply from 2013 will affect NECBOP. Many interviewees expressed a sentiment of: "The government won't let it happen", believing that the political fall-out from loss of supply to remote areas would be too great for a government to tolerate. A review of the continuance of supply obligation is currently underway (see http://www.med.govt.nz/templates/ContentTopicSummary___25527.aspx).

4.4. Relative importance of the different barriers to infrastructure

The people interviewed for this study came from a variety of backgrounds.

- Housing New Zealand regionally and centrally located staff;
- Ministry of Social Development regionally and centrally located staff;
- Te Puni Kōkiri housing staff;
- Ministry of Health Drinking Water Assistance Programme staff;
- District council works and services and building inspection staff;
- District council and district health board public officers of health;
- Housing managers from iwi organisations;
- Independent technical experts on water and wastewater systems;
- Interviewees located in Northland, the East Cape, the eastern Bay of Plenty, and Wellington.

A full list of interviewees is given in Appendix C.

Despite this divergence of backgrounds, there was a distinct convergence of opinion on the barriers to adequate infrastructure in NECBOP. Even the more technically-focussed interviewees raised primarily social issues as the most important barriers. These social issues included the low socio-economic status of rural households and communities (as the primary reason that households cannot afford maintenance or upgrades), and the lack of household knowledge about and motivation to undertake maintenance. Other factors such as tradesperson availability, transport costs of materials, and new compliance requirements for systems were seen by interviewees as important contributing factors that need to be resolved. However, they repeatedly emphasised that resolution of the social issues will be crucial factor in ensuring the sustainability of government interventions supporting infrastructure.

5. Support for the supply of essential services

5.1. Initiatives that directly support rural services and housing

5.1.1. The Housing New Zealand Rural Housing Programme

The Rural Housing programme (RHP) works with rural communities in NECBOP, providing a variety of interventions to improve the quality of owner-occupied housing. The RHP is delivered via Home Improvement Project Zone (HIPZ) service providers, who are contracted annually to deliver housing solutions. The following Housing New Zealand products are used in the RHP.

Home Improvement Project Zones (HIPZ)

A total of $0.84M (excluding GST) in 2006/07 was allocated to community-based housing providers (commonly Runanga) in NECBOP, to plan and deliver home improvement services. [29]

Essential Repair Suspensory Loans (ERSL)

The ERSL scheme in NECBOP is funded at $4.91M (excluding GST) for 2006/07.[29]

Loans under this scheme cover the costs of urgent or essential repairs to address faults that pose a serious health or safety risk to the household. The loan is written off by Housing New Zealand over three years, provided the household remains living in the dwelling. The suspensory loan structure is used instead of a grant, as a means to ensure that newly installed components (e.g. windows) are not removed and sold by occupants, and to ensure that government money is not used to upgrade houses shortly prior to their sale.

Eligibility criteria are given in detail in Appendix E. Applications are assessed on an individual household basis. Households must meet income and asset threshold criteria, and the dwelling must be classed as category A or B: posing significant or life-endangering threats to the health and safety of the household. Households living in dwellings classified as past redemption are encouraged to seek a long term solution involving re-housing rather than repair of the dwelling, although in the mean-time, urgent repairs to a maximum value of $10K can be carried out, limited to the minimum required to ensure that the household is not in immediate danger.

While there are currently no limits on per-house ERSL spending, Housing New Zealand has annual targets for the number of loans to be provided. These targets effectively impose an average per-house spend, and encourage regional Housing New Zealand managers to set limits on the maximum amount that can be spent per house. In 2006/07, the target number of loans for NECBOP was 240-270, suggesting an average per-house spend of around $19K.

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[29] Housing New Zealand Corporation Statement of Intent, 2006-2007. Available: http://www.hnzc.co.nz/hnzc/web/about-us/our-publications/statement-of-intent.htm

Infrastructure Suspensory Loans (ISL)

The ISL scheme is funded at $0.9M (excluding GST) for 2006/2007.[30]

Loans under this scheme cover the costs of providing essential services to dwellings. Essential services include: cleaning, repair, replacement, or installation of new water, waste, or power systems.

Eligibility criteria are given in detail in Appendix E. Loans can be made for both new and existing dwellings, and are available to individual households, groups of owner-occupiers, and community organisations. Households must meet income and asset threshold criteria. As for the ERSL loans, ISLs are normally written off over three years.

While there are currently no limits on per-house ISL spending, there are annual targets for the number of loans to be provided. These targets effectively impose an average per-house spend, and encourage regional Housing New Zealand managers to set limits on the maximum amount that can be spent per house. In 2006/07, the target number of loans for NECBOP was 50-60, suggesting an average per-house spend of around $16K.[30]

State Rentals

In cases where an existing dwelling is classified as beyond repair, a Housing New Zealand-owned, relocatable state rental house may be placed on private land to replace the existing substandard dwelling. This solution is a last resort option and is generally only considered once all other possible rural housing solutions have been exhausted. In 2006/07 $9.29M was allocated to increasing state housing in rural NECBOP.[30]

Eligibility criteria are given in detail in Appendix E.

Community Owned Rural Rental Housing Loan (CORRHL)

A Community Owned Rural Rental Housing Loan may be provided to community groups in NECBOP who want to develop their own social housing rental portfolio. Loans are available for the construction of new housing and the refurbishment of existing dwellings. In addition to the loan component, there is funding for technical assistance with the project (e.g. assistance with land acquisition, consent issues, etc). Unlike the ERSL and ISL, the loan is not suspensory.

In 2006/2007 a target number of one to two CORRHL loans are to be made, to a total value of $2M (excluding GST).[30]

Eligibility criteria are given in detail in Appendix E.

Community Housing Response Plans (CHRP)

RHP HIPZ service providers, in consultation with the communities they represent, have been required to develop Housing Response Plans.

A new approach, called Community Housing Response Plans (CHRPs) is currently underway, with Housing New Zealand taking a more pro-active role in gathering information about communities in need, and promoting the community engagement aspects of the process.

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[30] Housing New Zealand Corporation Statement of Intent, 2006-2007. Available: http://www.hnzc.co.nz/hnzc/web/about-us/our-publications/statement-of-intent.htm

- In stage one of the new CHRP process, Housing New Zealand is developing an information base for each rural community in NECBOP, collating data on their socio-economic indicators and their current housing and infrastructure situations.
- In stage two, housing plans will be developed for a small number of communities in the NECBOP area. They will be developed in close consultation with the communities. The plans will present the communities' housing aspirations, their plans for achieving their aspirations, and indicators of their readiness to engage in developing housing solutions.

5.1.2. Housing New Zealand home loan products

Several Housing New Zealand home loan products are also available rurally for low to moderate income earners, although not exclusively in NECBOP.

Papakainga - building a home on multiply-owned Māori land

Papakainga lending is available to enable people to borrow money to build or buy housing on Māori land in multiple ownership. The scheme was initiated because standard bank mortgages will not allow multiply-owned Māori land to be used as security.

- Preference is given to first home buyers, and recipients must have license to occupy the land they wish to buy or build on
- Easily re-locatable homes are preferred.

A target number of loans are made each year. In 2006/2007 the target was 25-30 loans, to a total value of $3M (excluding GST).[31] This includes LDRL loans (see below)

Low Deposit Rural Lending (LDRL)

The LDRL programme finished at the end of June 2006. However some loans are still available to graduates of the LDRL home ownership workshops. This scheme was targeted at first home buyers earning low to modest incomes, who wanted to buy or build in rural/regional areas. The scheme comprised support and advice services, a series of home ownership skills workshops, and access to a Housing New Zealand Low Deposit Rural loan with a 3% deposit and an interest rate fixed for seven years.

Kapa Hanga Kainga - Group Self Build

This is a scheme for people who want to build their home as part of a whanau group.

- A trust can be formed to oversee and organise the work.
- All participants must have completed an LDRL home ownership skill course, so they can access a 3% deposit.
- Grants are available to help with costs, such as:
    - Architects
    - Project Managers

[31] Housing New Zealand Corporation Statement of Intent, 2006-2007. Available: http://www.hnzc.co.nz/hnzc/web/about-us/our-publications/statement-of-intent.htm

- Other project related costs

- A total value of $0.178M (excluding GST) was allocated to the scheme in 2006/2007.[32]

Home Improvement Loan

Home Improvement loans are available to people on modest incomes, who are not able to finance improvements through other means. Common reasons for taking out this loan include: re-roofing, re-piling, adding another bedroom to accommodate the family, or adding a verandah. Interest on the loan is charged at market rates.

HNZC lending criteria for home improvement loans include:

- the applicant complies with Prudential Lending Standards
- the applicant has a low to modest income
- applicant has been declined financing by at least two lending institutions
- the property to be improved is on multiply-owned Māori land.

Home improvement loans are effectively only available to applicants who either have their existing mortgage with Housing New Zealand, or who own their home freehold. This is because the priority figure in bank mortgages usually means that there is insufficient security available for any lender other than the bank.

Welcome Home Loan (Mortgage Insurance Scheme)

In this scheme, Housing New Zealand works with participating lenders to provide mortgage insurance to the lender. The loans are available to people on modest incomes who can afford mortgage repayments, but have little or no deposit. Participating lenders offer up to 100% of the house price. Borrowers must meet all of the lender's normal lending criteria. In 2006/07 the total operating cost of the scheme was $8.9M, with a target number of 700-1000 loans to be provided.[32]

Housing Innovation Fund

The Housing Innovation Fund assists not for profit organisations, including community groups, iwi groups and local government, to improve or develop housing for low to moderate income earners and those with special needs. In 2006/07 the fund contributed a total of $16.75 million to social housing projects

Home Ownership Education

The home ownership education programme educates first home buyers on areas important to making the transition into home ownership, such as the difference between renting and owning a home, financial budgeting, and home maintenance. In 2006/07 the total operating cost of the programme was $4.5M, with a target number of 5,000 participants.[32]

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[32] Housing New Zealand Corporation Statement of Intent, 2006-2007. Available: http://www.hnzc.co.nz/hnzc/web/about-us/our-publications/statement-of-intent.htm

5.1.3. The Ministry of Health Drinking Water Assistance Programme (DWAP)

The DWAP is a $136.9m fund (excluding GST), aimed at improving drinking water supplies for small, rural disadvantaged communities. The fund was established in 2005, in response to feedback from small community water suppliers who anticipated difficulty in meeting the 2005 drinking water standards.[33] The DWAP assists improvement, upgrade or establishment of reticulated community drinking water supplies. It is not available for individual household supplies. There are two components to the scheme: the Technical Assistance Programme and the Capital Assistance Programme.

Technical Assistance Programme (TAP)

The TAP is worth a total of $15.6M over seven years, and provides technical assistance to communities in the form of workshops, information resources, and access to experts. Participating communities are expected to produce a Public Health Risk Management Plan that examines their existing water supply, assesses its management and the public health risks associated with the supply, and identifies improvements that can form the basis of an application for capital assistance. Non-council communities must also produce a Sustainability Plan. This plan must examine issues relating to the future viability and sustainability of the water supply, including the ownership and legal structure of the supply, the forecasted ongoing operational procedures and costs, and how they will be funded. In comparison to the CAP, eligibility for the TAP is quite open: Any supplier serving fewer than 5000 people can participate. This includes local government and central government organisations (such as schools), as well as community organisations. The TAP has been running since late 2005.

Capital Assistance Programme (CAP)

The CAP is worth a total amount of $117.8M over 10 years. It provides funding for capital improvements to drinking water supplies that supply less than 5000 people and at least 25 people for 60 days of the year (1500 person days). It is available to communities with a reticulated drinking water supply and to those who can demonstrate a need to establish one.

Criteria for the CAP is outlined in detail in the Ministry of Health document: “Drinking Water Assistance Programme – Criteria for Capital Assistance for Small Drinking Water Supplies”.[34] The main features of the criteria are:

- the supply must be owned by a local authority or by a residential community, via a legal entity such as an incorporated society. Or alternatively the application must be underwritten by a legal entity
- communities must demonstrate that they would have difficulty funding capital improvements themselves and have a deprivation index of four or more
- the supply must be operated on a not-for-profit basis
- the supplier must have participated in the TAP
- in all except exceptional circumstances, the maximum amount that will be funded is 95% of the costs of the capital works. A 95% subsidy is only available for communities that are

[33] Information on the 2005 Drinking Water Standards is available at http://www.drinkingwater.co.nz/external/documents.asp

[34] http://www.moh.govt.nz/moh.nsf/pagesmh/5575/$File/cap-criteria-nov06.pdf

small and more deprived. Larger and less deprived communities are eligible for proportionately smaller subsidies

- the CAP will fund community assets only – i.e. it will fund a reticulated supply, but not household connections to that supply.

The first CAP funding round opened for applications on 1 February, 2007, and closed on 31 May, 2007.

5.1.4. The Ministry of Health Sanitary Works Subsidy Scheme (SWSS)

The SWSS was announced in the 2002 budget. The scheme is currently on-hold, pending the results of a review. Its funds have largely been allocated. The SWSS was a $136.9m fund (excluding GST) that aimed to improve sewage treatment, reticulation and disposal for small rural communities, who were unable to fund the necessary upgrades to meet public health and resource management requirements. As well as improving sewage treatment, the scheme also covered new works to add fluoride to community drinking water supplies.

The prime criteria for the SWSS scheme were:

- the community's existing treatment plant disposal system and discharge poses health risks
- eligible communities were between 100 and 10,000 people
- socio-economic conditions of the community were to be considered
- the maximum subsidy for capital works was 50% for communities up to 2,000 people, reducing in a straight line to 10% for communities of 10,000 people
- the SWSS subsidy was to be at least matched by an equivalent contribution from the relevant District Council, and there must be an undertaking by that Council to ensure adequate maintenance and operating arrangements for 20 years.

For the fluoridation part of the Scheme, the prime criteria were:

- a maximum subsidy of 50% of the cost of the eligible capital works
- expenditure on water fluoridation was to not exceed more that 10% of the total annual appropriation for SWSS.

At the current time, it is not known whether the SWSS will be continued.

5.1.5. Te Puni Kōkiri Special Housing Action Zones (SHAZ)

The SHAZ is worth $456K in 2007/2008.[35] It assists Māori communities to develop housing plans. Housing plans identify housing needs (including infrastructural), how housing needs can best be met, and the resources the community can contribute. SHAZ will pay for set-up costs to get communities to the stage where they are ready to build, but it will not provide funding for capital works, instead referring projects to capital funding from other sources, such as Housing New Zealand or the Ministry of Health. Support through SHAZ is not necessarily financial: the initial stages of support are often purely advisory, for example helping with:

- establishing a legal entity (e.g. a trust board or association) to manage the project

[35] Te Puni Kokiri Statement of Intent 2007-2010. Available: http://www.tpk.govt.nz/publications/soi/default.asp

- providing access to professional advice (i.e. project management tools)
- ensuring the project is financially viable.

Some examples of initiatives that have been supported by the SHAZ are:

- development of proposals for Papakainga housing support from Housing New Zealand
- the Tolaga Bay contributory maintenance scheme
- funding for the Ngati Kahungunu Tools Trailer initiative.

More information on the SHAZ is available on the Te Puni Kōkiri website.[36]

5.1.6. Ministry of Social Development grants and loans

Two types of support relevant to infrastructure are available from the Ministry of Social Development.

- A non-recoverable special needs grant for repair or maintenance of on-site effluent treatment systems.
- A recoverable loan for essential and immediate house repair needs.

Effluent treatment system maintenance and repair grants:

Households who meet an income and asset test and who have an immediate and essential need for repair or maintenance of their on-site effluent treatment system may apply for a special needs grant of up to $300. The recipient must be either:

- a home-owner who resides in the house, or
- residing in a dwelling on Māori land held in multiple ownership with the permission of the landowners, and:
    - responsible for the maintenance of the on-site effluent treatment system which services that dwelling
    - making no or minimal payments for either the right to occupy the land or for the right to occupy the dwelling.

In a two year period, an applicant may receive more than one grant, but the total sum of those grants must not exceed $300.

Recoverable assistance programme grants

Recoverable assistance grants are available for emergency household needs, including repairs and reconnections to essential services, to a maximum of $200. Recipients are required to repay the loan, but no interest is charged. Recipients must meet the Ministry of Social Development's income and asset criteria.

[36] http://www.tpk.govt.nz/community/housing/SHAZ.asp

5.1.7. Jointly-funded housing coordinators

Three coordinator positions with iwi housing providers in Northland have recently been established, with 2 years of joint funding from the Ministry of Social Development and Housing New Zealand. The coordinators will address the social needs of families accessing housing services, coordinate and provide better access to the support available from different agencies, and where appropriate, link working age family members to training and employment.

5.1.8. Community initiatives

Several community-run initiatives in NECBOP support households to overcome barriers to home and infrastructure maintenance.

- Tolaga Bay has a contributory maintenance scheme. Householders who opt to join the scheme contribute $30 per week, and in return receive home maintenance work to the value of $1560 per year. The scheme covers maintenance jobs that do not require building consent. It is intended for people on low or modest incomes, who cannot access the RHP because they slightly exceed the income threshold requirements. In addition to addressing home maintenance issues, the scheme contributes to workforce development, with several of the younger people who have been involved in the project now working towards qualifications with the local polytechnic. The scheme has received support from Te Puni Kōkiri's SHAZ programme.
- The Ngati Kahungunu Tools Trailer is an initiative associated with the RHP, run by the Waikaremoana Trust Board, who are the maintenance contractors for the Kahungunu Executive ki Te Wairoa. In this initiative, the builder who carries out RHP-funded work visits households in weekends and advises them on small maintenance jobs they can undertake themselves. Completion of these jobs is a prerequisite to households accessing RHP funding. The initiative has received support from Te Puni Kōkiri's SHAZ programme.
- Several of the RHP HIPZ service providers run home maintenance education workshops for households.

5.1.9. District councils

There are no formal local government-run funding or assistance schemes for community or home infrastructure development or maintenance in NECBOP. However, district councils appear to be very willing to contribute technical or advisory support to infrastructure projects, and to assist projects through the consenting process, where possible.

5.1.10 Charitable trusts and regional energy trusts

Relatively small amounts of funding for housing or energy-related projects are available from charitable trusts and regional energy trusts.

- There are a number of charitable trusts that support house building projects, for example, Habitat for Humanity.[37] It is also possible to access funding for community infrastructure projects from some regional charitable trusts, including gaming trusts.

[37] For more information see http://www.habitatnz.co.nz/2_map.html

- Regional Energy Trusts such as the Eastern Bay Energy Trust (Eastern BOP) and Eastland Community Trust (East Cape) support energy-related projects such as community micro-hydro schemes and installation and maintenance of electricity reticulation. This support may prove important for communities that are at risk of losing access to electricity reticulation after 2013.

5.1.11. Energy Efficiency and Conservation Authority (EECA)

EECA fund grants to improve home insulation and other energy efficiency measures. While this is not specifically for the maintenance or upgrade of infrastructure, it is related as it is a means to reduce energy consumption.

5.1.12. Research funding

Two infrastructure-related research projects funded by government grants administered by the Foundation for Research, Science and Technology were mentioned by interviewees.

- A collaboration between Industrial Research Ltd, Ngati Porou, Eastland Networks Ltd and Negawatt Resources Ltd, to research the development of local energy generation and supply solutions.
- An Envirolink-funded project involving Gisborne District Council, that will provide advice on developing affordable on-site wastewater systems that meet environmental regulations without posing some of the problems associated with aerated systems.

5.2. Other support for rural communities

There are a variety of forms of support for rural communities that are not specifically related to infrastructure, but can potentially support infrastructure projects in a less direct manner. While it is out of the scope of this study to provide a comprehensive list of these initiatives, there are several sources of support that are worth noting.

- Government support for economic and business development through New Zealand Trade and Enterprise and the Ministry of Social Development.
- Support for trades training through the Ministry of Social Development (e.g. Enterprising Communities grants), the Tertiary Education Commission, Te Puni Kokiri, and the Building and Construction Industry Training Organisation. One such initiative is a Ministry of Social Development and Te Puni Kōkiri-supported trade training collaboration between Te Rarawa and Northland College.
- Department of Internal Affairs funding for salary subsidies for community coordinators.

5.3. Effectiveness of support

As summarised above, there are many schemes that can directly or indirectly support infrastructure development in NECBOP. Collectively, how well do these schemes address the problem of sub-standard infrastructure in NECBOP?

Interviewees consistently stated that the support has alleviated many households' sub-standard conditions, and that there have been some great successes. They felt that without such programmes as the RHP, the situation in NECBOP would be much more serious.

Interviewees also consistently observed that the problem of sub-standard infrastructure has not been "solved", and that a number of factors have limited the effectiveness of the support. All four interviewed RHP HIPZ service providers had waiting lists for assistance, one estimating that it would take three years to address all of the houses on their list.

5.3.1. Barriers tackled by the available support

Figure 5 maps the support schemes for infrastructure to the barriers they address. This mapping is limited to the most direct forms of assistance. Forms of support not included are:

- Those that do not directly tackle barriers, although they may be prerequisites for doing so (CHRPs, housing coordinators, research, and general support for rural communities);
- Those that provide support for buying or building homes. These are related to the condition of infrastructure, but do not directly tackle any of the barriers identified (CORRHL, LDRL, Papakainga, and Kapa Hanga Kainga).

This mapping suggests several interesting features.

- Barriers to the upgrade and maintenance of on-site infrastructure are tackled directly by some schemes, and circumvented by others. The means used to circumvent barriers are:
    - supporting development of reticulated systems
    - replacing owner-occupied houses with state rentals, thereby transferring the responsibility for on-site infrastructure maintenance to the government.
- Around four times more money has been allocated to schemes that support upgrades to reticulated infrastructure (DWAP and SWSS) than to schemes that can support upgrades of on-site infrastructure (ISL and ERSL). However, the DWAP and SWSS are schemes that cover all of New Zealand, while the ISL, ERSL, SHAZ and Relocatable State Rentals are targeted to the NECBOP area.
- With a few exceptions, support concentrates on the affordability barrier. Exceptions are some community-run initiatives (some of which receive support from the SHAZ), and the TAP component of the DWAP, which has a community engagement and education focus.
- Several types of assistance don't directly upgrade infrastructure, but help to create conditions in which infrastructure can be better supported. These include the CHRPs, support for housing and community coordinators, research into appropriate systems, and some activities associated with the SHAZ.

5.3.2. Factors that impact on the effectiveness of support

Interviewees identified a number of factors that have compromised the effectiveness of the available support.

Amount of funding

- Most interviewees felt that the scale of the sub-standard rural housing problem in NECBOP has been underestimated, and the overall level of support has been inadequate to fix the problem. While many households have benefited from the support they have received through programmes such as the RHP, there are still many more in need.

Barriers to the maintenance and upgrade of essential services:

On-site systems	a. Affordability	b. Acceptance of sub-standard infrastructure	c. insufficient maintenance knowledge	d. Insufficient maintenance motivation	e. Unavailability of tradespeople

Reticulated water and wastewater systems	a. Communities lack resources to develop their own supply	b. District Councils have limited resources and communities don't support rates increases

Barriers tackled by the available support:

Support ($/year)	Barriers tackled
ISL ($0.9M in 2006/07)	a. Affordability
	a. Communities lack resources to develop their own supply
	In some cases circumvents problems with on-site systems by supporting the development of reticulated supplies
ERSL ($4.9M in 2006/07)	a. Affordability
Ministry of Social Development grants and loans	a. Affordability
DWAP (TAP: average of $2.2M/yr over 7 years CAP: average of 11.8M/yr over 10 years)	b. Acceptance of sub-standard infrastructure (TAP component)
	a. Communities lack resources to develop their own supply
	b. District Councils have limited resources and communities don't support rates increases
	Circumvents problems with on-site systems by supporting the development of reticulated supplies
SWSS (average of $13.7M/yr over 10 years) on-hold	b. District Councils have limited resources and communities don't support rates increases.
	Circumvents problems with on-site systems by supporting the development of reticulated supplies.
Community Initiatives	c. insufficient maintenance knowledge (Home maintenance workshops, Tools trailer)
	d. Insufficient maintenance motivation (Tools trailer, Tolaga Bay contributory scheme)
SHAZ ($0.46M in 2007/08)	c. insufficient maintenance knowledge (e.g. through support of the Tools trailer and other community initiatives)
	d. Insufficient maintenance motivation ((e.g. through support of the Tools trailer and other community initiatives)
Rural State Rentals ($9.3M in 2006/07)	Circumvents several problems with on-site systems by providing dwellings for which Housing New Zealand is responsible for infrastructure. Some problems with households looking after systems are still experienced.

Figure 5. *Mapping of the major forms of support to the barriers that they tackle.*

- The amount of additional support that would be required to fix the problem is unknown. RHP HIPZ service providers vary in their estimates of the level of further need in their communities, and few have robust data to support estimates. The house by house approach of the RHP has contributed to difficulties in estimating need because HIPZ service providers have not been encouraged to assess needs over the whole of their communities. Current work associated with the Housing New Zealand CHRPs will develop better data on the level of need.
- Interviewee comments on the adequacy of funding were largely focussed on the RHP. The Ministry of Health's SWSS has had no impact to-date on deprived communities in NECBOP. The DWAP, which is still in its early stages, is felt to be a very promising scheme, but tangible effects of its funding are yet to be seen.

Sustainability of interventions

- Interviewees commented that repairs to houses and on-site infrastructure, supported by the RHP, have in many instances proven to be unsustainable. Systems and houses have been seen to return to poor condition within a few years of the repair. A number of factors were identified as contributing to this.
    - Some sub-standard repairs were carried out in the early days of the RHP. However, interviewees felt that these problems had largely been resolved through improved management of the scheme.
    - Educational support to teach householders how to maintain and look after on-site infrastructure has largely been absent. Where community schemes supporting home maintenance education exist, they are felt to be beneficial in improving the sustainability of interventions.
    - Socio-economic factors (such as limited job opportunities, high unemployment and benefit dependency), that contribute to low household incomes and corresponding difficulties in maintaining infrastructure, have not been effectively tackled.
    - Home-owner motivation to undertake maintenance is not addressed by the RHP. Some interviewees felt that the scheme has contributed to a decrease in motivation by providing a government hand-out that perpetuates dependency by requiring no contribution from the home-owner.
    - Further affecting motivation, the limited funding available per house, and the exclusive focus of repairs on health and safety issues has often left dwellings only partially upgraded, or with little visible evidence of repairs. Interviewees suggested that households would take more pride in more visible repairs, and would then be more motivated to maintain their homes, increasing the sustainability of solutions.
    - The annual contracts with RHP HIPZ service providers, which include a requirement for target numbers of house repairs to be undertaken each year, do not encourage them to develop longer term initiatives to address educational and motivational issues. However, a number of HIPZ service providers have undertaken work in this area, more recent contracts with HIPZ service providers have included maintenance education requirements.

Assistance to individual households or communities

- Most interviewees commented that assistance for rural infrastructure in NECBOP has been directed largely at the individual household level, rather than the community level.

While this perception may appear to be at odds with the level of funding for on-site versus reticulated schemes (Figure 5), it is consistent with the fact that tangible impacts from the SWSS and DWAP schemes have yet to be felt in NECBOP. The evaluation of the RHP found that the original intent of the programme to implement a longer term, cross-government community engagement and development approach was not met. Instead only the shorter term requirement for house by house repairs was met.[38] Interviewees identified a number of problems arising from the lack of focus on communities.

  - The house by house approach limits opportunities to propose reticulated solutions. Examples were given in which neighbouring houses were provided with individual septic tanks, when a more cost-effective solution would have been to develop a cluster sewer system for them.
  - Opportunities for economies of scale can be missed, for example in the purchase of materials or services, or the processing of consents for work on closely located houses.
  - Community-level schemes can offer greater leverage of other funding sources than interventions targeted at individual households.
  - Community level schemes offer the potential to engage the community and feed into community development initiatives.

- Interviewees made positive comments about the use of the DWAP and ISLs for community level schemes. In particular, DWAP is felt to have developed excellent procedures for community engagement and for ensuring the sustainability of the solutions it will fund.
- The ability of the RHP to support a community level approach is to some extent hindered by the annual RHP contracts with HIPZ service providers, which do not encourage them to undertake multi-year community engagement processes.

Awareness of support

- Several interviewees commented that awareness of the support available for infrastructure is not as good as it could be. Some families in need are not aware of the support that they are eligible for.
- Several interviewees from district councils and RHP Service Provider organisations felt that they did not know about all of the forms of support available from different agencies. Even with the information they do have, they find it difficult to decipher exactly what is funded by different agencies and how this funding can be coordinated to meet their communities' needs. They suggested that there should be a better coordinated source of information on schemes, collating details on the support available from different agencies.

Coordination between agencies

Coordination between the different agencies that support infrastructure is important for ensuring the success of projects, particularly those that support community-level reticulation. A number of interviewees commented on the difficulties that they experience matching together support from different agencies. As a demonstration of the coordination required,

[38] Centre for Research, Evaluation and Social Assessment Ltd (2007) An assessment of the rural housing programme 2001-2005/06: a synthesis of evaluation findings.

the following list outlines the roles that different government agencies can take in supporting a community drinking water reticulation project.

- The Ministry of Health via the DWAP can support new and upgraded community-owned infrastructure, e.g. works to establish a new supply, plants and equipment for the treatment and monitoring of the supply, and water mains leading from the supply, However, it cannot fund individual household connections to the water main as it cannot fund individually-owned items.
- Housing New Zealand can use ISLs to fund low income households' connections to the water main. ISLs can also be used to support community-owned components of the infrastructure and in this sense potentially overlaps with the DWAP. The Housing New Zealand ISLs and ERSLs are also the only currently available sources of support for upgrading wastewater services, which may be needed in association with improved water supplies.
- District councils can provide technical support for the set-up and ongoing maintenance of the new supply. Councils can also provide support to assist the project through the consenting process.
- Te Puni Kōkiri, Runanga, and other iwi organisations can assist government agencies to make contact with Māori communities, and to work with the communities so that they agree upon and buy into a solution.
- The Ministry of Social Development can support the labour requirements of constructing and maintaining community infrastructure through training industry partnerships, labour market development, and wage subsidies for workers involved in the project.
- Trade training requirements can be supported through a variety of initiatives, including support from the Tertiary Education Commission, the Ministry of Social Development, and Te Puni Kōkiri.

The following two cases demonstrate successful coordination between communities and support agencies in establishment of an upgraded and a new reticulated drinking water supply.

Te Mahoe

Te Mahoe is a small community comprised of 21 households in the eastern Bay of Plenty. The village was built in the 1960s for construction staff who were working on the Matahina hydroelectric dam. During the building of the dam Te Mahoe flourished. Following completion of the dam, most of the construction workers moved away from the area. Employment opportunities are few, and Te Mahoe is now classified as highly deprived (decile 10).

Recent years have seen some positive developments in the village: the Te Mahoe Village Trust was formed to take ownership of the houses from Mighty River Power, and the Trust has worked with a number of government agencies to assist residents into home ownership, to promote home maintenance, and to develop economic opportunities in the area.

Te Mahoe's drinking water supply has been transferred from Mighty River Power ownership to Whakatane District Council ownership. The water is sourced from a local bore. The supply developed problems with water quality after work on the Matahina dam disturbed the source. This resulted in very high turbidity (suspended solids in the water).

A collaboration was initiated between the community, Whakatane District Council, Housing New Zealand and the Ministry of Health DWAP. Whakatane District Council undertook scoping work to develop a solution, and advised that a new bore should be sunk.

The new bore was constructed with support from the Housing New Zealand ISL scheme. Funding will also be sought from the DWAP for upgrading the reticulation system and installing telemetry (remote monitoring systems) so that the Whakatane District Council can undertake ongoing maintenance and monitoring of the supply at a lower cost to the community. The water supply remains in Whakatane District Council ownership.

Whirinaki

Whirinaki is a small community of approximately 200 people in South Hokianga, Northland. The population is approximately 90% Māori, and a large proportion live on multiply-owned Māori land. In 1999 the Hokianga experienced severe flooding that brought to a head existing problems with poor quality drinking water supplies in the area.

The Ministry of Health engaged Hauora Hokianga, a branch of the charitable trust: Hokianga Health Enterprise Trust, to lead a project to establish safe drinking water supplies in the Hokianga. The Whirinaki community had the desire and the capability (including good administration, management, and a good labour force) to develop its own water solution. Whirinaki was allocated $100,000 by the Hauora to do so.

A project taskforce was formed, comprised of personnel supplying management, administrative and technical skills. The taskforce undertook community consultation and was given a mandate by kaumatua, kuia and the whole community to drive the project. A solution was devised that involved securing a dam site and installing significant new infrastructure including water treatment systems and supply lines.

The project involved support from and collaboration between many different parties:

The *Whirinaki community* provided design ideas and labour. Some of the labour was very demanding, such as the hand-digging of over 1km of trenches. The *Hauora Hokianga* provided $100k, which acted as leverage for support from other agencies. The *Department of Internal Affairs* provided a $138k Lotteries grant. The *ASB Bank Community Trust* committed $172k for materials acquisition. The *Community Employment Group* committed $42k, and the *Ministry of Social Development* committed $63k to support work activities. *Te Puni Kokiri* provided $218k for training, research, planning, flood management, construction, maintenance, and establishment of a Water Board. The *Māori Land Court* contributed $5k for easements, consents, legal fees and documentation *Regional and District Councils* worked with the community to advise on technical issues, and to develop flood prevention measures.

On 22 November, 2003, the Whirinaki Waterline was officially opened.

The water system is owned by the three marae in Whirinaki. The Whirinaki Water Board has been set up to manage the day to day operation of the supply. Local capability has been developed to maintain the waterline and system; as of June 2006, there was a core group of four local people maintaining the supply.

Benefits to the community attributed to the project include: a constant supply of good quality water; infrastructure that is able to support an increase in the population of the community and new developments such as a kura kaupapa Māori; improved credibility with others, and the emergence of organisations tackling housing issues in the South Hokianga.

This information has been summarised from a case study available on the website of the Office for the Community and Voluntary Sector[39]

[39] http://www.goodpracticefunding.govt.nz/resources/case-studies/whirinaki-waterline.html

As demonstrated above, there is currently no single funding source that will support all community needs associated with infrastructure projects. Each project needs to access support from a variety of sources. It is clear from interview responses and from the case studies of Te Mahoe and Whirinaki that this coordination has occurred successfully in some instances. However, there was consistent comment from interviewees that coordination is difficult to achieve and could be improved. The following points describe findings on the means of coordination between agencies, and the factors that impact on the effectiveness of coordination.

- Most coordination between support initiatives happens at the regional level. Many interviewees reported putting a great deal of effort into generating and maintaining personal links with staff in other agencies. The regional approach to coordination was generally felt to be appropriate. Regional staff have a good working knowledge of the infrastructure-related projects in their areas, and are therefore well-placed to decide how different forms of support can be combined for each project.
- There are a number of formal initiatives in NECBOP that promote linkages between organisations, such as fora, working groups and joint projects and secondments. The following groups were mentioned by interviewees as the most relevant to housing and infrastructure issues.
    - CoBOP (Community Outcomes Bay of Plenty): A large committee comprised of Council Chief Executives and representatives from 22 central government agencies. There are various CoBOP working groups, including one focusing on housing, and another looking at Māori land use.
    - A regional working group focusing on the Bay of Plenty settlement of Minginui has replaced a working group that was comprised of central government officials. The current group is comprised of staff from Whakatane District Council, TPK, Housing New Zealand, Department of Conservation, the local District Health Board, and MSD.
    - NIF (Northland Intersectoral Forum): a large group, comprised of Chief Executives of the local authorities and the central government agencies in Northland. The forum acts to ensure a whole of government approach to issues in Northland.
    - The Northern Forum: A community driven forum that meets every six weeks and is comprised of Northland-based community housing providers, with attendance from Housing New Zealand and TPK.
    - TDP (Tairawhiti Development Partnership): comprised of representatives from Gisborne District Council, Wairoa District Council, Ngati Kahungungu, Ngati Porou, and Tūranganui-ā-Kiwa. The TDP's current focus is on economic development, and it has a particular focus on the energy supply issues facing the region.[40]
    - The Gisborne office of Housing New Zealand runs a housing forum that meets every six weeks to share information. Meetings are open to all interested parties, and there is attendance from local authorities, community support and advocacy groups such as age concern and CCS, iwi housing providers, police, and others.

[40] More information available at http://www.wairoadc.govt.nz/tdp/

  - At least one forum for building inspectors exists, comprised of staff from the different district councils on the East Coast.
  - As mentioned in section 5.1.7, three coordinator positions with iwi housing providers in Northland have been established with two years of joint funding from the Ministry of Social Development and Housing New Zealand.

- The regional fora were felt to be of variable effectiveness in contributing to tangible change in their regions. Irrespective of their effectiveness, they are valued for the inter-agency networking opportunities they provide.
- Interviewees from District Councils and HIPZ service providers appeared to be less likely to feel that they have good linkages with other agencies. Some reported good linkages, but others felt poorly linked. In more than one instance they were not aware of the housing-related fora in their regions, and suggested that such fora should be created. They were also more likely than others to report a need for better coordinated information on the support available from different agencies.
- There was a great deal of frustration expressed with the difficulties in fitting funds together from different government agencies. A common refrain was “government funding is in silos”, referring to the fact that strict rules on what different schemes will fund creates difficulties in supporting a whole-of-community solution. It is particularly frustrating for staff who are managing projects in which they integrate funds from different sources, but are required to manage and report on the different streams of funding separately. Despite these difficulties, coordination is occurring between schemes. It may be that coordination could be streamlined through better alignment of funding streams.
- Central government agency staff also expressed frustration at the difficulties they experience in aligning support from their different agencies. They suggested that there needs to be a greater senior level commitment to government agencies working together.
- In addition to the regional level fora, there are initiatives at the central government level that are attempting to promote coordination between agencies. An example is the CHRP advisory group, coordinated by Housing New Zealand, that is attended by the Ministry of Social Development, Te Puni Kōkiri, the Ministry of Health, the Tertiary Education Commission, the Department of Building and Housing, and the Department of Internal Affairs.

5.4. Overlaps and gaps in support

5.4.1. Overlaps

Interviewees were asked if they knew of any overlaps between infrastructure-related schemes, that is, areas where different schemes provide the same type of support to the same people. Only two overlaps were identified.

- Both the DWAP and the ISL can be used to fund reticulated community drinking water supplies.
- Insulation retrofits can be funded by several different schemes, including ERSL, EECA EnergyWise Home Grants, and grants co-funded between EECA and the Eastern Bay Energy Trust.

Interviewees were more concerned about gaps in support than overlaps. Many stated that overlaps could be easily addressed through coordination between agencies.

5.4.2. Gaps

Interviewees were asked if they knew of any gaps in support for infrastructure, that is specific areas where types of support that are needed but not available, or specific types of households that need assistance, but are ineligible for the available support. A number of gaps were identified.

- In the absence of support from the SWSS, there is little support for reticulated community sewerage. Some interviewees felt that a wastewater subsidy scheme should be run alongside the DWAP because upgraded water supplies can lead to more wastewater, placing greater pressure on existing sub-standard sewerage. While the ISL can assist with the upgrade of community sewerage, at $0.9M/year it is a very small scheme in comparison to the DWAP and the SWSS (collectively worth just under $28M/year).
- Households whose income or assets take them just above the income threshold requirements for the RHP cannot access support for repairing their on-site infrastructure. These low to moderate income households do not possess the means to fund expensive repairs themselves (such as the $7000 to $30,000 for installation of a new wastewater system). Although in theory they could access a Housing New Zealand Home Improvement Loan, interviewees said that closer examination of their situation would often reveal that they could not afford such a loan. Examples were given of families above the income threshold, living in very poor conditions and unable to afford repairs or access financial support.
- The RHP criteria make it difficult for working age people with no dependents to access support. While there is no policy that excludes these people from the RHP, justification for RHP support must take into account the circumstances of the household. This effectively results in a bias towards support for families and the elderly as they are more susceptible to the health and safety risks posed by the dwelling.
- RHP support is only available for owner-occupied dwellings, and cannot be used to upgrade rental properties. RHP HIPZ service providers say that they are unable to assist renters, despite the fact that some rental properties are clearly in substandard conditions. They stated that shortages in rural rental accommodation make households more likely to put up with substandard conditions, that people are unfamiliar with the possibilities of support through the Tenancy Tribunal, and that such processes are a “foreign concept” for their people.
- The Ministry of Social Development recoverable assistance grants are effectively not available to people with pre-existing high debt because it would be unethical for Ministry of Social Development staff to increase their debt load.
- The definition of rural, used by the RHP, excludes some very deprived small urban centres with high housing needs. Areas covered by the RHP include rural areas with high, moderate and low urban influence, and highly rural/remote areas, as shown in Figures 1, 2, and 3). Interviewees identified Murupara (in the eastern Bay of Plenty) as a deprived community with high housing needs that is excluded from the RHP because of its non-rural designation.
- There is insufficient support for maintenance education for homeowners.
- There is no support available for repairs that do not impact on health and safety. Comments were made that this reduces the sustainability of health and safety-related repairs because repairs that result in little visible improvement to the house do little to motivate home-owners to undertake maintenance.
- While there is funding available for research on alternative energy supply options (section 5.1.12), capital funding for constructing alternative energy solutions is difficult to find.

5.5. Key points from this section

This section has discussed the barriers to the supply of essential services, the gaps and overlaps in support, and the issues that compromise the effectiveness of support. The major findings are summarised below.

- Barriers.
    - Affordability of on-site systems
    - Acceptance of sub-standard infrastructure
    - Insufficient knowledge of how to maintain on-site systems
    - Insufficient motivation to maintain on-site systems
    - Unavailability of tradespeople
    - Communities lack the financial resources and human capability to develop their own reticulated services
    - District councils have limited resources to develop reticulated supplies and constituents are resistant to rates increases
    - Lines companies make little or no profit from their supply of electricity to sparsely populated, remote areas.
- Gaps.
    - Currently little support available for development of upgrade of reticulated community sewerage.
    - Households whose income or assets take them just above the threshold for the RHP cannot access support for repairing on-site infrastructure.
    - Working age people without dependents find it more difficult to access support for repairing on-site infrastructure.
    - Households living in private rental accommodation cannot get support for upgrading infrastructure and do not access Tenancy Tribunal support.
- Overlaps.
    - The DWAP and the ISL can fund reticulated drinking water supplies.
    - Several schemes fund insulation retrofits.
    - Overlaps are not a major problem and can be dealt with through inter-agency coordination
- Issues compromising the effectiveness of support.
    - Insufficient funding available.
    - Insufficient attention to the knowledge, skill and motivational barriers to upgrade and maintenance of on-site infrastructure, resulting in unsustainable solutions.
    - Focus on individual households as opposed to whole communities or clusters of houses.
    - Lack of awareness of the available support.
    - Insufficient coordination between agencies and sources of support.

6. Options for Improvement of Government Support

This study has identified a number of barriers to the supply of essential services. It has also found that while current government support for essential services has had some very positive impacts, it is not fully addressing the barriers. There are aspects of the way in which the support is currently configured that compromise its effectiveness, and there are gaps in the available support.

Addressing these problems will require a coordinated policy development process. This report is not intended to substitute for such a process. The options described below are based on interviewee suggestions and the findings from this study. They may provide a useful starting point for the policy development process.

6.1. Continue to support initiatives to upgrade infrastructure

It can be argued that giving government support to households in remote areas of NECBOP only encourages them to stay in areas that are marginally viable socio-economically, and that it would be better to withdraw support, so as to encourage inhabitants to move to more economically viable areas. There are a number of counter-arguments to this proposition, including those based on ethical and Treaty of Waitangi obligations. It is beyond the scope of this study to discuss those arguments.

There are, however, findings from this study that highlight some likely practical consequences of withdrawing support.

- Given the existing situation where households have been living, often for many years, in substandard conditions in remote areas of NECBOP, it would appear that such conditions are in themselves insufficient to stop people living in an area.
- Interviewees said that Māori, in particular, have strong ties to their ancestral land, as well as a desire to live in whanau-based communities. This can override concerns about the adequacy of housing or infrastructure.
- One dwelling's inadequate infrastructure may affect many more people than just those in that household. For example, malfunctioning septic systems can contaminate waterways, creating health risks for whole communities.
- Interviewees alluded to moves in some Māori communities to eschew government support and develop autonomous solutions to the issues they are facing. While this may be a positive move, it also has the potential to be associated with the development of a sense of isolation from (and possibly even antagonism towards) the rest of New Zealand.

Withdrawing support may therefore do little to discourage people from living in substandard conditions in remote areas. It may have the added detrimental consequences of exacerbating health risks to communities and reducing societal cohesion.

6.2. Address the knowledge, skill, and motivational barriers to upgrade and maintenance of on-site systems

Support for on-site infrastructure has to date largely focussed on the affordability barrier that individual households face in installing or maintaining systems. The barriers that have been less well recognised are:

- acceptance of sub-standard infrastructure
- insufficient knowledge of how to maintain on-site systems
- insufficient motivation to maintain on-site systems
- unavailability of tradespeople in remote areas.

Through not tackling these factors the effectiveness of support has been reduced. Repairs have tended to be unsustainable because not all homeowners have the knowledge, resources, and motivation to commit to the maintenance and care of their systems .

A number of potential avenues for addressing these barriers were suggested by interviewees.

- Promote awareness of the risks associated with sub-standard infrastructure. This could be combined with community engagement processes around infrastructure projects, or it could form a component of education initiatives (see below).
- Incorporate an education component into interventions such as the RHP. Education initiatives can focus on how to maintain homes and care for on-site infrastructure, and they can also promote awareness of the risks of not carrying out maintenance. Moves towards this are already afoot: some RHP HIPZ service providers already run home maintenance workshops for households accessing RHP support, and Housing New Zealand is initiating a requirement for maintenance education into its 2007/2008 contracts with East Cape and Eastern Bay of Plenty RHP HIPZ service providers.
- Promote home-owner buy-in to repairs funded by the RHP through requiring a contribution to the work from the home-owner. This could be a small financial contribution, or a contribution of their effort. Special consideration would have to be made for the elderly and disabled who may not have the physical capability to help with the work.
- Find a way to support highly visible upgrades to dwellings, such as painting houses. While government funding for this can be difficult to justify as it is not a health and safety issue, interviewees felt that it would do much to promote household pride and motivation to undertake maintenance. It may be that programmes such as the RHP could support non health and safety repairs by assisting in sourcing cheap materials or promoting the setting up of community working bees.
- Work towards building up local tradesperson capability in remote areas. This is already being tackled to some extent through the RHP. Coordination with training and employment support from TEC and the Ministry of Social Development may be beneficial in this regard. In addition, a community level approach that coordinates larger or multiple projects may help by providing enough work to support a tradesperson to stay in the area (see section 6.4)
- The contributory maintenance scheme in Tolaga Bay (see section 5.1.8) supports participating households to undertake home maintenance in a way that promotes buy-in through the home-owner contribution. A number of interviewees commented that it would be worthwhile to consider implementing similar contributory schemes in other areas, perhaps in conjunction with the RHP. The scheme may need to be modified to suit

different household circumstances, for example, the $30 weekly contribution may be too high for the lower income households accessing RHP, and there could be specific modifications needed to apply the scheme to houses on multiply-owned Māori land.

- Reticulated services supplying communities circumvent problems with home-owner care and maintenance of on-site systems. A greater focus on development of reticulated systems would therefore help to relieve problems with the maintenance and upgrade of on-site systems. Note, however, that very good mechanisms for monitoring and maintenance also need to be established for any new reticulated supplies.

6.3. Take a longer term approach with the RHP

The RHP takes quite a short term approach to support, approving applications for ERSLs on a house by house basis, and contracting annually with the RHP HIPZ service providers. This is at odds with the original intent of the programme, which was to include a longer term cross-government community development approach, in addition to making house repairs.[41] A longer term approach would have the beneficial effects of:

- making it easier for the programme to achieve economies of scale through concurrent processing of work on co-located houses
- increasing the ability of the programme to support community or cluster reticulation
- encouraging HIPZ service providers to undertake community engagement and other processes that take longer than one year.

Options for change that were suggested include:

- engaging RHP HIPZ service providers on multi-year contracts
- examining the RHP contracts with HIPZ service providers to ensure that they effectively recognise longer term community engagement and education processes
- taking more of a bulk-funding (and less product-based) approach to contracts with HIPZ service providers. In this approach, providers would be given more autonomy to decide on the interventions that would work best for their communities
- the Community Housing Response Plans (CHRPs) are a development that will allow the HIPZ service providers to access better information on their communities' needs. This information is a prerequisite for taking a longer term, whole-of community approach to the delivery of the RHP.

6.4. Place a greater emphasis on community engagement and socio-economic development

Many interviewees commented that, with the exception of the DWAP, there has been insufficient attention paid to engaging communities around infrastructure projects. Community engagement is seen as key to generating solutions that are more sustainable. Good engagement results in solutions that are community-driven and therefore wanted and contributed-to by members of the community. Good engagement would also ensure that community members understand the nature of the solution and can afford its ongoing

[41] Centre for Research, Evaluation and Social Assessment Ltd (2007) An assessment of the rural housing programme 2001-2005/06: a synthesis of evaluation findings.

running costs. Community engagement around an infrastructure project can also be coordinated with other types of community development work, for example support for social and economic development.

Several options were suggested for increasing community engagement and socio-economic development.

- The RHP could place a greater emphasis on engaging communities around infrastructure projects and determining what infrastructure the community needs and can support in the longer term. This would have the detrimental consequence of slowing down progress on repairs and upgrades carried out through the programme, but it may be more successful in the longer term through increased sustainability of solutions.
- The CHRP process that Housing New Zealand is currently initiating has promise as a mechanism to improve community engagement.
- The TAP component of the DWAP is widely held to have implemented very good community engagement processes, and could be used as a model for other infrastructure-related community engagement initiatives.
- Initiatives to improve the socio-economic status of an area could be run concurrently with community engagement around housing and infrastructural issues. Development of business and job opportunities in the community would help to make upgrades sustainable, by raising households' abilities to maintain and upgrade their own infrastructure. This would require coordination between agencies that support social, housing, employment and business development initiatives, as discussed in section 6.6.

6.5. Examine possibilities for increasing cluster and community reticulation

Interviewees felt that there needed to be a greater emphasis placed on developing cluster and community reticulation solutions because they can circumvent a number of the problems with on-site systems. As discussed above, there are some aspects of the short term, house-by-house approach of the RHP that have made it more difficult to support community level solutions. The DWAP is now available to support reticulated community drinking water supplies, but the SWSS was not accessed by low income rural communities in NECBOP. The only support currently available for reticulated sewerage is the RHP ISL.

Options to consider for increasing the emphasis on community systems include:

- addressing the current dearth of funds for wastewater reticulation in low income rural communities
- investigating the possibility of making greater use of cluster wastewater treatment systems in areas where there are small groups of closely located houses (e.g. around a marae), but where the housing density is insufficient for reticulation of an entire community to be viable
- investigating methods of supporting community reticulation projects. Two successful examples that could be used as models for new community reticulation projects were highlighted in section 5.3.2: Te Mahoe and Whirinaki. Two aspects of the Whirinaki case are particularly worth noting.
    - The capital infrastructure items for the Whirinaki water supply are owned by the community not the district council. This satisfies a community desire for

self-determination, and it means that the district council does not have to pay for depreciation on the assets.

- A potential disadvantage of community ownership is that communities can lack the expertise and resources to monitor, maintain and fix the infrastructure. In Whirinaki this was overcome by training local people to monitor and maintain the supply. This has the additional benefit of providing the trained individuals with employable skills.

6.6. Improve coordination between support agencies and funding streams

Interviewees highlighted a need to improve the coordination between agencies that support activities relevant to rural infrastructure. This is discussed in detail in section 5.3.2. In particular it has been observed that there needs to be better coordination between schemes supporting infrastructure run by Housing New Zealand, the Ministry of Social Development, the Ministry of Health, and Te Puni Kōkiri. There should also be further effort to coordinate with training, labour force, and business development initiatives, for example, through theTertiary Education Commission, the Ministry of Social Development, and New Zealand Trade and Enterprise.

While coordination between agencies is happening successfully at the regional level, this is to some extent hindered by the policies in place for different schemes and what they will fund. Better alignment of funding would make it easier to piece together support for community solutions. It would also assist community infrastructure projects to address the wider socio-economic and capability factors that contribute to sub-standard infrastructure.

Improving alignment between agencies could be brought about in a variety of ways. The following points are ideas suggested by interviewees.

- Integrated contracting, where different agencies agree on target outcomes and contribute funds to a single contract for infrastructural work.
- A number of interviewees suggested that there were too many separate sources of funding and that consideration should be given to combining funds into one scheme run by one agency.
- A coordinated source of information could be developed, describing the support available from different agencies and the way in which different sources of support can fit together. This information could be delivered in a variety of formats: web based, written, and through presentations.
- The CHRP initiative is making an effort to engage multiple agencies.
- The case studies of Whirinaki and Te Mahoe (section 5.3.2) provide examples of community drinking water reticulation projects that have involved successful coordination between agencies.

6.7. Address the overall level of funding for infrastructure initiatives

The great majority of the interviewees felt that there needed to be a greater funding for supporting infrastructure for low income houses in NECBOP. This study has found evidence of long waiting lists for RHP assistance (reportedly up to three years), and unofficial ERSL

and ISL per-house funding limits that are insufficient to address all of a dwelling's needed repairs. However, interviewees also felt strongly that any increase in funding needs to be accompanied by changes to the way in which support is managed so that solutions implemented will be more sustainable. One interviewee said:

"there are always going to be a lack of funds. I suppose if we put more focus on maintaining what you've got"

The following points draw on interviewee suggestions and findings from this study.

- Interviewees were clear that any increase in funds should be accompanied by changes to improve the sustainability of the solutions provided. These changes should address the knowledge, skills and motivational barriers to maintenance and upgrade of infrastructure, take a longer term approach to the RHP, improve the support for community engagement, and improve coordination between agencies. These changes may slow down, initially at least, the rate at which individual households can be assisted, because effective community engagement and education are long term processes. However, ultimately the support will achieve better value for money if its solutions are maintained over time by households and communities.
- The amount of the needed increase in support is currently unknown. Work underway by Housing New Zealand, associated with the CHRPs, aims to develop a better indication of the overall level of need in NECBOP.
- Any increase in support would need to consider carefully the implications for capability to deliver solutions, both in terms of the availability of building industry professionals, and the capability to administer funds and project manage repairs and upgrades. Several interviewees, when asked about the level of funding, stated that their organisation did not currently have the capability to manage a greater number of projects. In addition, interviewees said that in the early days of the RHP, pressure to complete a large number of repairs in a short time period resulted in some poor quality, unsustainable work due in part to the engagement of unsuitable contractors.
- Monitor ongoing developments with the future of the supply of electricity to rural NECBOP. On-site electricity generation solutions are particularly expensive to install and difficult to maintain, and if supply to remote areas is discontinued after 2013, it could have serious implications for the level of government funding needed to maintain services to low income rural households in NECBOP.

6.8. Address the major gaps in support

A number of gaps in availability of support were identified by interviewees. The most major gaps, and suggestions for tackling them are below.

- Households with income just above the RHP threshold are unable to obtain grants for infrastructure repairs, and are often not able to afford to pay for the work themselves. Possible ways suggested of addressing this gap include:
    - development of an interest-free loan product to assist these households
    - allowing greater flexibility in the eligibility for RHP support, allowing households over the income threshold to access support on a case by case basis
    - allowing greater flexibility in mixing different RHP products, for example permit part of an infrastructure upgrade to be funded by an ERSL or ISL, and part through a Home Improvement Loan.

- Households comprised of low income working age people without dependents find it difficult to access support for on-site infrastructure upgrades and repairs. This results from the insufficient RHP funding (and the correspondingly long waiting lists), in combination with a requirement to consider the health and safety risks to the household when prioritising work (children and the elderly are often at greater risk). Addressing the overall level of funding for housing and infrastructure initiatives may be the best way to tackle this gap.
- Rented dwellings in rural communities can be among those in the poorest condition. However government support for upgrades and repairs is limited to owner-occupied houses. Given that inhabitants of these dwellings are not accessing support through the Tenancy Tribunal, and given that this problem may get worse with New Zealand's declining rates of home ownership, further work may be needed to identify ways to promote the upgrade and maintenance of rented dwellings.
- Taking more of a bulk-funding approach to contracts with HIPZ service providers (as described in section 6.3), may assist in addressing gaps by allowing the providers to take a more flexible approach to addressing need.

6.9. Recognise the need for improved on-site wastewater treatment and electricity generation solutions

Currently used on-site wastewater treatment and electricity generation systems are not always appropriate for low income households in NECBOP. Disadvantages of the currently available systems include:

- high installation costs
- intensive, complicated and costly maintenance
- non-compliance with environmental regulations (for conventional septic systems in areas with poor soakage).

Interviewees pointed to a number of developments and research initiatives that are aiming to address these barriers. Examples are: Envirolink-funded research into less costly wastewater options for areas with poor soakage, the E-Bin wastewater system that has been developed in Northland,[42] some Housing New Zealand wastewater system trial projects, and some community electricity generation research projects funded by the Foundation for Research, Science and Technology, and by regional Energy Trusts. Some interviewees also pointed to international developments in sustainable and autonomous housing that may provide ideas for adoptable solutions.

[42] E-Bin Distributions Ltd, Paihia.