

A Broadband Friendly Council

A Protocol between the members of Local Government New Zealand And The Telecommunications Carrier's Forum.

The Broadband Friendly Protocol is a two part exercise to:

- Develop some jointly agreed guiding principles and approach between local government and the telecommunications carriers (Module1). This remains under negotiation with the Telecommunications Carriers' Forum (TCF)
- Provide guidance and good practice material for councils to better facilitate the deployment of high speed broadband in their communities (Module 2).

Module 2 is available as a working draft for further comment and development as councils become more engaged in broadband infrastructure activities.

Module 2

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Scope and Overview

The Broadband Friendly Protocol will address the following topics:

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Section 1: The New Zealand Telecommunications Environment

This section deals with the complex environment of the telecommunications in New Zealand. This chapter aims to get an understanding of how the telecommunications industry works. There is particular emphasis on the policy, legislative and regulatory environment that governs the fixed and mobile telecommunications networks with particular attention to issues relating to passive infrastructure. The protocol has a two pronged approach. It is an agreement between business and local councils to work together more efficiently and effectively to fast track telecommunications and in particular broadband infrastructure into New Zealand communities. The protocol focus on the technical details around:

Local Government Policies and Practices on:-

1. New subdivision development
2. Road openings and ducts also known as Passive Infrastructure – The majority of the issues are covered in the National Code of Practice for Utilities’ Access to the Transport Corridors developed by the New Zealand Utilities Advisory group.
3. Legal implications for Council involvement- Legal opinions on councils ability to use ratepayer funds for broadband infrastructure development
4. Council procurement policies
5. Use of Council owned infrastructure for housing broadband infrastructure. (Poles, holes, hills and buildings)
6. Use of shallow or micro-trenching techniques.
7. Any issues associated with the aesthetics , noise and location of telecommunications infrastructure that is outside the scope of the National Environmental Standard on Telecommunications currently being developed by Ministry for Environment

Industry Policies and Practices on:

1. Providing information of future network sites.
2. Planning for future network build.

The traditional monopoly around end to end service provision that has been enjoyed by the incumbent Telco has largely been broken. There are a variety of wholesale service providers offering a wide range of products and services at the infrastructural layer of the telecommunications network. The challenge facing the New Zealand telecommunications sector in providing service provision is centered on the notion of creating super fast broadband networks.

There are three major players in the telecommunication environment and each have a role to play and each sees the issues around cheaper, faster, broadband from a slightly different perspective. Outlined below are the perspectives of the telecommunications environment from a:

- a. Central government perspective
- b. Local government perspective
- c. Industry perspective.

These three perspectives as set out below form the basis of developing the protocol and will influence how the issues are addressed and the solutions that are developed.

a) Central Government's perspective

Central government creates the policy and regulatory environment that drives investment from the private sector. The private sector however will only invest in areas where they can earn a reasonable rate of return so where a market failure arises due to private sectors inability to provide services the policy framework allows for government intervention to redress the market failure. This ensures that the private sector is not bearing an unfair proportion of the social costs of service provision. For example in rural New Zealand the population is very sparsely populated and the business case for the private sector to provide services to these areas is weak at best. In this case government needs to ensure that those living and working in these areas are not marginalised and that at best they receive a minimum level of service irrespective of their location

There are a number of acts, regulations and policies which govern the telecommunications environment and these are discussed below:

The legal and regulatory environment that impacts the telecommunications industry falls into three very broad categories.

Legislation that affects and controls the:

- a. *Location of the infrastructure.*

Telecommunications Act:- administered by the Ministry for Economic Development (MED) and implemented in part by Local Government

Resource Management Act 1994:- administered by the Ministry for the Environment (MfE) and Implemented by Local government

- b. *Impact of the Infrastructure*

Telecommunications Act:- administered by the Ministry for Economic Development and implemented by the Commerce Commission with local government having a role under management of access to the road corridor for installation of telecommunications infrastructure.

Resource Management Act 1991:- administered by the Ministry for the environment and Implemented by Local government.

c. *Industry policies and practices*

Commerce Act 1986:– administered by the Ministry of Economic Development and implemented by the Commerce Commission¹.

Central government agencies in partnership with industry and local government have been working on two major national policies that will harmonise some of the inconsistencies created by local decision making. The aim is to harmonise as far as possible provisions under council district plans and requirements under the “reasonable conditions clauses for utilities accessing the road corridor for maintaining, installing and upgrading utility infrastructure. Looking at the two standards below we note:

National Environmental Standard on Telecommunications (NES).

This NES looks at four National Environmental Standards under the Resource Management Act 1991 for low-impact Telecommunications Facilities. The NES when in effect will override provisions in council district plans and will cover four national standards on

1. radiofrequency fields generated by telecommunication antennas
2. the erection of roadside cabinets
3. the addition of antennas to existing structures, (such as light poles), on roadsides or verges
4. a standard on noise levels for the operation of roadside cabinets.

The NES is expected to take effect before February 2009.

The second one is:

The National Code of Practice for Utilities’ Access to the Transport Corridors. (The Code)

At the time of writing the New Zealand Utilities Advisory Group has led the charge on developing this guide. The guide is aimed at supporting two major government objectives:

1. To fast track where possible the development of a ‘world class infrastructure’ which is key to New Zealand’s economic transformation. The Code is aimed at having more consistency to road intervention processes across the country supported by legislation where appropriate.
2. The need for better coordination of works between Utility Operators and road controlling authorities.

The Code covers the following key principles:

- Right of access by Utility Operators to the corridor for the placement, maintenance, improvement and removal of utilities;
- Right of Corridor Managers to ensure safe and efficient operation of the corridor through the application of reasonable conditions;
- Defining the roles and responsibilities of the parties involved;

¹ The Commerce Commission enforces legislation that promotes competition in New Zealand markets and prohibits misleading and deceptive conduct by traders. The Commission also enforces a number of pieces of legislation specific to the telecommunications, dairy and electricity industries.

- Promotion of planning, liaison and coordination among parties to achieve greater efficiency and cost effectiveness;
- The integrity of the corridor being maintained through compliance with transparent quality assurance procedures;
- A safe work site and minimum inconvenience to the public during the work; and
- Collaboration with each other in the spirit of good faith.

It is expected at the time of writing that the code will be in effect before November 2008.

Once in place the above mentioned national standards will override certain provisions in council district plans and other local government planning policies and practices.

National consistency on all matters will never be achieved. The purpose of the Local Government Act 2002 and the Resource Management Act 1991 is to preserve and promote local decision making and local prioritisation.

Local government and industry have to work together better to develop good relationships by gaining a better understanding of each other's business drivers. This will enable the two to work together to address issues where local discretion prevails so that the issues that may impinge on investment in an area can be addressed in a collaborative manner.

The Digital Strategy Targets

The central policy document that is driving change in the digital age is the Digital Strategy. This is government's flagship policy document that will provide the basis for how New Zealand will harness the benefits of being digital. The second iteration of the Strategy was launched in August 2008. In the section focussed on infrastructure under the enabler of connectivity the government's Digital Strategy notes:-

- the need for widespread broadband to fully access the power of the new digital world
- the government targets for connections according to the Digital Strategy are aims.

By 2010

- New Zealand will rank in the top half of the OECD for Broadband uptake, speed and coverage
- All future networks co-funded by government to be based on open-access principles.

By 2012

- 80 percent of users will have access to broadband connections of 20 Mbps or higher and 90 percent will have access to 10 Mbps or higher.
- Open-access urban fibre networks will be operating in at least 15 cities and towns.
- Terrestrial broadband coverage for 93-97 percent of the population, with more affordable satellite solutions for remote locations.
- Additional international cable
- Plan in place for ensuring the last 3 percent of users have access to broadband connections of 1 Mbps or higher.

By 2018

- 80 percent of homes or premises will have access to fibre, or equivalent high bandwidth capable technology.
- 90 percent of users will have access to broadband connections of 20 Mbps or higher

There are a number of standalone work streams that support the goals of the Digital strategy and these include but are not limited to

- The National Content Strategy
- The Public Libraries Framework
- The e-government strategy
- The Geospatial Strategy
- The People's Network
- The National ICT Educations and Skills Framework
- The amendments to the Telecommunications Act

b) Local government's perspective

The current legal framework in New Zealand does not recognise the role of councils in the telecommunications industry. Telecommunications infrastructure has been provided by the private sector since the privatisation of Telecom in 1990. In module one a set of principles were introduced which councils can use to develop policy interventions to ensure that their local communities have access to world class telecommunications services.

Over the last five years there has been a significant increase in participation in New Zealand, Australia and across the world, of Local Government in the provision of urban fibre networks. Councils have intervened where the private sector has failed to provide a solution that will support the social and economic development of New Zealand communities. Councils have recognised the need to intervene in order to maintain their region's economic growth and productivity to enable their communities to participate more fully in the digital age².

The areas most affected by the private sector market failure are the rural areas. This is where the population density is low that it is uneconomic for the private sector to provide the right level of telecommunications infrastructure and still make a return on investment that would satisfy shareholders. In such situations the laying of council owned fibre (for specific projects) can provide a financially attractive alternative to using the incumbent Telco.

The key ingredients generally accepted for any form of Council participation and or intervention is usually:

1. Recognition of the need to intervene and participate
2. Identifying options on how to participate
3. The formation of a support/action group which has the necessary mandate from all participating Councils
4. The development of an understanding of infrastructure and services currently available, identifying the needs of the community and any consequent service gaps (Ref: regional broadband capability review and stock take).
5. The development of an ICT policy and action plan (The Broadband Plan)

² Councils in a Digital Age is a progress report on local government initiatives relating to the digital strategy.

6. Reinforcement and/or directing the “Community Outcomes” in the LTCCP through telecommunications infrastructure development.
7. Establish more friendly process and policy to encourage private investment and public private partnerships.

Local government has set up a number of local and regional structures to have a more focused and coordinated approach to the development of broadband infrastructure, within the New Zealand regions.

Group	Geographic Coverage
Auckland Regional Broadband (ARBA)	Auckland Region
Environment Bay of Plenty Region	Environment Bay of Plenty Region
Venture Southland	All of Southland
Wellington Regional Exchange (WRX)	Greater Wellington Region

As confirmed by the legal opinion commissioned by Local Government New Zealand Council controlled organisations and council controlled trading organisations are the appropriate governance structures for councils that want to engage in the provision of telecommunications infrastructure. Some current examples of this are Christchurch City Networks. Some councils have chosen not to create a council controlled organisation. They have instead taken a shareholding in a private company. Current examples are Smartlinx3 and Nelson Marlborough Info Regions.

Councils have also created internal structures within councils to develop policy interventions and to advise council on the role that they should play in ensuring that their council and or region has access to cheaper, faster and more reliable broadband services.

Local diversity is evident in the Regional and local governance structures that councils have put in place in their respective communities. There are a number of consistent themes that are emerging as good practice for local government when setting up regional and local governance structures that oversee the advancement of telecommunications services with a particular focus on Broadband Infrastructure. These include

1) Alignment of District Plans for consent of telecommunications infrastructure construction.

ⁱLocal diversity is a critical component of New Zealand communities and communities everywhere. Alignment should not come at the expense of local democratic decision making.

Legislation that recognises and protects local diversity

The Local Government Act 2002

The purpose of local government is-

a) To enable democratic local decision –making and action by, and on behalf of, communities and

b) To promote the social, economic, environmental and cultural wellbeing of communities, in the present and for the future.

The Resource Management Act 1994

1) to promote the sustainable management of natural and physical resources

2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while:-

a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment. Local councils are empowered to make choices that reflect the priorities and values of the people they govern. Councils and industry can work better to develop policies that promote the interest of both parties without impeaching on the principles of local autonomy and democracy which drive the purpose and the intent of both the Local Government Act 2002 and the Resource Management Act.

These two Acts empower councils to make choices that prioritise local diversity. In so doing councils and industry can work better to understand each other's business. Industry can help councils to understand better the impact of compliance costs on business investment decisions.

Councils and industry can work better together through this protocol to lower the costs of compliance to business, in a manner that supports and respects the individual identity of communities recognised in both the Local Government Act 2002 and the Resource Management Act 1991.

2) Engagement of external expert advisors

The core business of local government is management of core community infrastructure like roads, sewers, pipes, water, libraries, parks to mention a few. As noted in Module one there is a growing acceptance among the sector that telecommunications is a core community infrastructure. However unlike traditional core infrastructure there is no legal framework that defines or supports the role of councils in the provision of telecommunications infrastructure. As this is a new territory for councils there is the need to engage outside help in the initial planning stages to assist councils make an informed decision about their role and intervention policies. It is however more important for councils to develop their own in house expertise in this area, and councils should be encouraged to do this as much as possible in place of hiring expert advisors.

3) Coordination with Central Government Agencies (e.g. legislation and national standards, regional needs and issues)

Local government is the implementer at a local and regional level a vast variety of government legislation and regulation. There is often a fragmented approach between central government national imperative and the local government community imperative. While both levels of government are often working towards achieving the same goal they often have different drivers, and often the opportunity to maximise on the synergies is lost. This is improving and Local and central government are working together better on a number of initiatives that will promote the deployment of telecommunications infrastructure. These include the NES and the National Code for Utilities operating in the Transport Corridor which were discussed earlier.

4) Development and maintenance of a Regional Broadband Plan

The strategic framework

Strategic planning is part of business as usual for councils. All councils have a strategic planning framework as part of their planning cycle for the Long Term Council Community Plan, the Annual Plan and other key planning and strategic frameworks for councils. Some good practice guidelines for a strategic framework are:-

- Understanding the needs of the community
- Understanding the resources required to fulfil the vision
- Consultation with Local Government stakeholders, suppliers and independent experts
- Alignment with local and regional strategic plans and policies.

C. Industry perspective

(Section is blank to be filled in by the TCF)

Section 2: Local Government Policies and Practices

Local councils are the implementers of the Resource Management Act 1991 and the custodians of the Road Corridor. The deployment of infrastructure to support both fixed and mobile telecommunications is heavily dependent on getting approval from councils. This approval in most cases is subject to interpretations by each council under their individual district plans, engineering codes city by-laws and other local policies and practices. These variances in interpretations trigger different requirements between jurisdictions thus increase the cost of compliance to business and therefore in some cases could slow down investment in infrastructure.

Councils have a number of options available to them to promote investment in telecommunications infrastructure at an accelerated rate in their communities. Below is a summary of some good practice guidelines that could encourage increased investment.

Summary

The tools identified, are being tested by various Councils throughout the country. They include:-

- a. Development of sound policy to encourage broadband facilities to be installed in new subdivision development, retirement villages, and infill housing.
- b. Providing network operators with favourable access to Council owned structures and buildings, unused ducts and pipes etc.
- c. Installation of "open access" ducting during council road openings.
- d. Ensuring coordination between utilities, Council and the Road Controlling Authority for road openings and curb reconstruction to increase opportunities for low cost duct installation ('open once' policy).
- e. Establishment of policy on use of shallow trenching techniques for laying fibre cables
- f. Assignment of a Council Controlled Trading Organisation to establish a ducting and fibre cabling network.
- g. Establishing consistency across a Regional Council area in RMA, District Plans and Council Policy for consent requirements etc. in regard to telecommunications infrastructure.
- h. Gaining leverage through consolidated purchasing of telecommunications services by Local Government in the region.

The above topics have been consolidated and will be discussed in detail under the following six broad heading:

1. New subdivision development
2. Ducting policies
3. Council procurement policies
4. Use of Council owned infrastructure
5. Shallow or micro-trenching
6. Building Access and Wiring
7. Incorporating telecommunications into the District Plan and the LTCCP.
8. Creating public private partnerships
9. Establishment of industry collective purchasing agreements

10. Installation of “open access” ducts
11. Creating a core fibre network.

1. New subdivision development

Council develop engineering codes that a developer will adhere to when building a new subdivision. Councils place requirements on developers to ensure that certain services for “network infrastructure” and other utilities such as telecommunications are provided for. Councils have a degree of discretion over what goes into the engineering codes based on local conditions and industry good practice.

Current practice

A review of Council engineering codes shows that only a handful has standards in place. Most District Plans include as a condition of Resource Consent, that the developer make adequate provision for telephone services to each lot. Some District Plans go further and require the placement of ducts and “consideration” to the provision of broadband services. These conditions are currently loose and in addition, design practices vary considerably between telecommunication service providers.

The developer may also get to choose which telecommunication supplier to use, providing that basic telephony services are being provided. There have been cases where the price being charged by the incumbent supplier has been challenged and an alternative supplier used. The network operator in most cases then gets to choose what technology will be deployed based on their own criteria. The design and equipment is then provided by the network operator for installation by the developer and on completion, these assets are vested back to the network operator for the establishment of services to end users [There appears to be some local variations on this at times]

There have been instances where an alternative to Telecom has been chosen by the developer (mainly driven by cost) and Telecom has then been required, through customer demand, to retrofit its services at greater expense and environmental disruption once there is a realisation by the community that Telecom services are not available through the alternative provider.

The provision of telecommunication services by wireless only, does not conform to the current requirements although there are instances in some rural areas where telephone service is provided solely by wireless technology. e.g. Telecom CMAR “Country sets”.

While it may be useful for Council to encourage developers to install the capability for high speed broadband services, there is uncertainty as to Council’s ability to stipulate this (either by fibre cable or copper cable) as a requirement of the consent process. The initiative at this stage is primarily left up to the developer, who may see this as a marketing advantage, and the policy of the telco supplier.

[Comment: What scope/authority do Council have to require that high speed broadband infrastructure be deployed? Waitakere, Manukau, and Auckland City Councils are working though some policy options now]

Some examples of current policies in councils

Waitakere City Council: (Need the council policy that is in place to allow this to happen will need to get this from Dean)

Hobsonville greenfields subdivision being run by Housing Corp: EOI has been issues for suppliers to provide a FTTH network which the Housing Corp will own....project yet inconclusive. Ref : Dean Drake

Western Bay of Plenty (Need the policy document this is in)

Arrangements shall be made for telecommunication reticulation. Where only part of this reticulation is being supplied initially the arrangements shall include the requisite space being maintained for the installation of the remainder of the reticulation at a later date. Ducts shall be provided in the carriageway formation at locations where cables may be required at a later date. The need to provide Broadband internet cables will be considered when designing the subdivision.”

Options for Council

In order to encourage FTTH technology into greenfields developments there are a number of options available to Council. While it is widely recognized at present that upgrading existing copper cable distribution networks to fibre is still uneconomic, there is a growing realization that opportunities for establishing modern fibre optic based cabling distribution networks in greenfields developments makes economic sense.

- (1). Develop policy which encourages developers to cater for the eventuality of retrofitting a FTTH technology i.e. the requirement for a specified ducting system. Councils may look to explore the feasibility of requiring developers to install future proofed technical solutions for telecommunications, which in the long run can add to the property value of the area in general. In this light, it could be in council’s interests to consider requiring as part of their engineering codes that all green field subdivisions be fitted with fibre to the cabinet and that all buildings are retrofitted for fibre cabling through the provision of a suitable ducting network.

Issues to consider:

- a. There are a number of issues that need to be resolved concerning, who bares the cost, ownership, standards, technology, security, backhaul capability. In some cases a council contribution may be required. There are also a number of legal issues to consider, the question is does the current legal framework allow councils

to dictate to developers that they should provide a certain level of service in relation to telecommunications service provision.

- b. Council could miss an opportunity by not making provisions that facilitates FTTH technology. The cost of retrofitting this technology at a later date is usually cost prohibitive at least with the current technology.

(ii) Council can stipulate that a second ducting system be installed alongside the first to cater for the eventuality of a second network operator.

Issues to consider

- a. Design standards would need to be developed.
- b. Ownership and ongoing access policy needs to be established.
- c. Council may need to contribute to cost of alternative ducting network.
- d. Ducting could possibly be used for other utilities such as gas and power at a later date.
- e. The economics of infrastructure duplication at the residential distribution level are very challenging.
- f. Unlikely to be attractive to a second provider.
- g. Lead in to homes would not be duplicated

Issues to consider with option (iv):

(iii) Councils can ensure that wholesale arrangements are in place such that the infrastructure being installed by a network provider can be used by alternative network providers to provide their services.

Issues to consider:

- (a) Already a possibility today to a limited extent (e.g. World Exchange services over Telecom's FTTH and "unbundled bitstream access")
- (b) Infrastructure may be restrictive in terms of what services it can provide (this may be solved to some extent by Telecom company separation undertakings)
- (c) Councils may not be in a position to dictate that a "open access" network provider is used and the extent of "openness".

(iv). Councils can require through the Code of Practice that adequate ducting and pits are installed by the developer to facilitate FTTH technology and vested back to Council ownership.

Issues to consider:

- (a) Has the potential to provide an open access network and drive forward the FTTH program.
- (b) Design standards will need to be developed
- (c) Ongoing maintenance obligations.

- (d) Who installs owns and operates the fibre cable infrastructure and electronics will need to be resolved
 - (e) Requires a policy on how to allocate these resources to network providers
 - (f) Requires backhaul from the subdivision
- (v) Councils can require through the Code of Practice that adequate ducting and pits are installed by the developer to facilitate FTTH technology and vested back to Council ownership. Council to also install fibre cable to the residence and lease this back to a network operator (could be more than one operator).

Issues to consider

- (a) Has the potential to provide a truly open access network and drive forward the FTTH program.
- (b) Council would need to manage ownership and provide maintenance support.
- (c) Would be a new role for most Councils
- (d) Councils may be reluctant to take on ownership of more assets due to the increased depreciation costs.

Legal implications

Relevant legal implications to go here

Guidelines for good practice

Councils can implement some or all of the following guidelines as part of adopting good practice measures that can enhance the speed at which broadband infrastructure is deployed in their community.

1. Establishing new subdivision resource consent requirements within the District Plan to include the capability for broadband infrastructure.
2. For large greenfields developments - a move toward policy and/or engineering practice requiring developers to ensure that infrastructure is installed which supports the establishment of fibre networks to the home and premise under the city Code of Practice or District Plan.
3. Promotion of suppliers adopting the open access principles in module one of the protocol.

2. Ducting policies

Current practice

The establishment of a ducting network is an essential element of any fibre optic based network and also represents a significant proportion of the costs. Any reduction in this cost is therefore beneficial. Councils are in a prime position to achieve this through careful policy and civil works coordination.

The majority of councils do not have any specific policy on the establishment or sharing of ducting for telecommunications other than stating that underground ducting/cabling is the preferred option and is a permitted activity under the District Plan. There are specifications provided in some plans for road crossings and reinstatement etc.

A number of Council have initiated a program to install ducts as the opportunity arises through their programmed maintenance works as roads and curbing are being opened. These ducts can then be made available for telecommunications suppliers to use or be used by Council in partnership with a telecommunication supplier.

Stipulating that a utility or developer provides additional “open access” ducting when performing road openings or development work is currently believed to be outside of the powers of Council under the RMA and leaves the process open to challenge [check this].

Fibre cable sharing and combined installations are already common practice by the major carriers for the long haul routes with occasionally the inclusion of a more minor local participant such as Inspire Net. While this can create some coordination issues, this cost sharing provides major savings for the telcos in upgrading or establishing new routes.

For operational, maintenance and commercial reasons, the sharing of ducts is not common practice amongst operators and is actively avoided. Council would therefore need to be cognisant of this when installing an “open access” ducting system for use by telecommunications providers and should involve potential users prior to installation.

Ducting systems will also vary in design depending on their purpose (e.g. long haul or local distribution) and the cabling technology being deployed. For this reason Council contemplating installing ducts for later use by telcos must install something which is ultimately useable and will not require significant alteration work to bring it up to standard. The common copper cabling reticulation system does not generally use ducting in residential areas and generally comprises of direct buried 50/100 pair cables being fed from a larger feeder cable which maybe ducted.

While some Council have included the requirement for ducting systems in residential developments, they currently have little power to enforce this and/or stipulate the technology or type of ducting systems to be used by either a developer or a telecommunications provider.

Examples

Auckland City Council

A variety of different projects are undertaken by the various divisions of Council often in isolation to each other. Opportunities for leveraging these projects for any broadband programme initiatives can therefore be lost. The Auckland City Council has therefore assigned a specific role for the high level coordination and leverage off other unrelated Council projects where this is possible.

Tararua District Council

The Tararua District Council has formed a partnership with Inspire Net to provide fibre networking throughout the Danevirke CBD. The Tararua DC have leveraged off its project to upgrade the paths and curbing by simultaneously installing telecommunications ducting with Inspire Net to provide the design and networking infrastructure and provide high speed broadband services.

Options for Council

A number of options exist for Council to get involved in the construction of duct networks for telecommunications:

- (I). Provide consistent requirements across Districts Plans within a region for the requirement to install ducting in new subdivision work and maintenance upgrades etc.

Issues to consider:

- a. Council's power under the RMA may be challenged here.
- b. This will not achieve an "open access" network at the infrastructure level.

- (i) Council can adopt a policy of installing "open access" ducting whenever the opportunity exists through Council or utility maintenance and expansion programs.

Issues to consider:

- a. Will require design considerations so that telcos can use the infrastructure without undue additional costs
- b. This will provide an "open access" network at infrastructure level
- c. Need to manage ongoing ownership and maintenance
- d. Generally telcos and operators are reluctant to share ducts
- e. The proposed NZUAG national Code will provide some framework here (coordination practice already exists in many Council)
- f. Requires the development of a "master fibre reticulation plan" so that effort is not wasted and ducts remain unused.

- (ii) Councils can work more closely with developers and telcos to understand their current practices and conditions under which FTTH or high speed broadband infrastructure will be deployed.

Issues to consider

- a. The industry may not be willing to share information that is deemed to be commercially sensitive in nature.
- b. Councils have no legal framework within which to enforce its policies in relation to how telecommunications infrastructure should be deployed.
- c. Maintains the competitive market approach
- d. Likely that only one access provider will be interested in a project as residential distribution networks are a natural monopoly
- e. May not provide “open access” at infrastructure level
- f. Encourage the establishment of a duct network to support alternative fibre network.
- g. Would be most effective if an independent network operator provided capacity for service providers to use.
- h. Telecom cabinets would need to be able to accommodate additional active components or a second adjacent cabinet would be required.
- i. Initial investment required with unknown demand profile

Legal Implications

It is possible that the legal rights of Council may be challenged when making new policy regarding the establishment of broadband infrastructure. As stated earlier councils have no legal mandate which they can use as a framework to control the development of telecommunications infrastructure. For example council has no legal right to compel a telecommunications company where it can and cannot lay its infrastructure and the terms under which it will grant access to competitor’s access to that infrastructure.

For this reason a number of Councils and Local Government New Zealand have sought legal opinion in order to clarify the ground rules and avoid challenge. Council must be fully aware of what is within their legal rights to do in order for policy to be effective.

Guidelines for good practice

1. Establishing consistent requirements and standards for Code of Practice and District Plans across a region.
2. Some Council are moving toward the creation of an “open access” ducting system in which Councils may lease space to a network operator. These ducting systems are installed at a lower cost by leveraging of maintenance programs and utility road openings etc.
3. Many Council have established regular coordination between utilities and road control authorities for road openings to minimize disruption to the community and ensure the opportunity to share trench space is utilised. The adoption of an “open once” policy can be encouraged by making the conditions of reopening before a specified time period more onerous on utilities e.g. requiring full surface reinstatement.
4. Where building ducting infrastructure in an opportunistic way the project must be guided by a “master plan” which will ensure a useful outcome in a timely manner.

5. The integrity of unused ducts will diminish rapidly over time therefore management and monitoring systems should be set up immediately after installation.
6. The use of existing Council owned abandoned ducts and pipes for running fibre cables etc must be investigated on a section by section basis. The nature, (construction materials, depth, age etc) and location of the duct plus the cost of inspection and upgrade are key factors for consideration.
7. Formal agreements are required and local network operators for the opportunistic laying of telecommunications ducting during Council and utility road openings and trenching works in order for this process to be fair and sustainable.

3. Council Procurement Policies

Collective purchasing is a well established and successful method used by industry sectors throughout New Zealand to ensure members are adequately supplied with telecommunications facilities suited to the industry. This often results in better coverage and highly competitive pricing for the individuals within the collective group. Examples range from New Zealand Restaurant Association, Fonterra, New Zealand Motellers Association and RD1 customers.

Councils have the ability to effectively change the regional broadband environment through their collective bargaining power to purchase telecommunications services. Councils in general are quite likely to be a significant purchaser of telecommunications services and as such represent an important client to any network provider. Outside of the major centres, Council and council facilities would be a dominant purchaser in the area and as such could command some influence over suppliers. The question to be asked is how this position could be effectively used for the benefit of the community?

Current practice

In many areas there may be little choice of supplier but even then consolidated procurement can be of value to both the client and the supplier. Sales are simplified and longer term revenue security is of benefit to a supplier. In many instances different business units within councils can have different arrangements for telecommunications service meaning the council does not always take advantage of the economies of scale that can arise from bulk purchase of the services required by ALL council facilities. Some of the potential benefits to council and the community of aggregating demand for services are:

- Consistent service pricing at the most favourable rate across the region
- Leverage to extend and/or improve broadband services to areas deemed uneconomic by the supplier.
- Expansion of cellular broadband coverage

The opportunity for demand aggregation across various other sectors of the community will be dealt with separately and the ability of Council to influence the purchasing

behaviours of other Government organisations especially will be limited without some Central Government intervention.

The State Services Commission is developing a “Common Framework for State Sector Broadband Demand Aggregation” to leverage off the state sector purchasing power in order to share the associated infrastructure and stimulate new investment on high-speed broadband network infrastructure for the benefit of both government and the wider community. This work is still under development and will require considerable change in purchasing habits from central Government agencies before being effective. [Ref: “Common Framework for State Sector Broadband Aggregation” work under the Digital Strategy.]

Examples

Examples listed here

Options for Council

- i. Consolidate Local Government telecommunication purchasing across a region and seek favourable conditions from the supplier through an RFP process.
- ii. Local Government provides preferential status to suppliers providing “open access” high speed broadband services
- iii. Establish longer term contracts with a supplier

Issues to consider:-

- a. It may take some time to establish due to differing purchasing cycles of various Council
- b. It may not suit all Council in the region (but can still be effective in a reduced area)
- c. An alternative or additional accounting process may need to be established
- d. There may be little choice as to who is able and willing provide extended rural services

Legal implications

Any legal implications to go here

Guidelines for good practice

1. Establishing a common network for all Council facilities and offices to connect to within a region. This promotes the sharing of administration, major systems resources and the secure backup of information at different sites.
2. Combined purchasing of cellular services, voice trunk circuits and calling minutes etc can reduce costs to Councils.
3. Encourage purchasing through collective industry bodies to encourage suppliers to supply the same service package to the entire industry and not just the “easy to get at” customers.

4. Use of Council Owned Infrastructure

Councils are in a position to reduce the cost of entry into the broadband supplier market by providing favourable policy around the use of Council Owned infrastructure. In order to manage the demand for this some policies need to be in place such that Council is not seen to favour any particular supplier and ensure that there is overall community benefit.

The types of infrastructure that may be of value to a supplier are:

- Council owned buildings
- Disused pipes (water and sewage)
- Council laid ducting
- Water towers
- Light Poles etc
- Existing or disused fibre or wireless infrastructure
- Land
- Overhead trolley bus wiring or catenaries

Current Practice

Smartlinx 3 is a joint venture company that has nine shareholders of which Porirua City, Hutt City and Upper Hutt City are three. The company developed an open access layer 2 Ethernet network. Smartlinx 3 has worked with councils to use community owned assets for deployment of broadband infrastructure. Community owned infrastructure being used currently is

- Water reservoirs- height, power, accommodation
- Disused Service pipes- sewers, water and storm water
- Ducts
- Buildings
- Land
- Poles-lightning, power, trolley bus, traffic lights
- Existing fibre

Citilink in Wellington used the trolley bus wires to wire up the wellington Central business district.

Examples

Dunedin City Council study on the use of disused water pipes in the Central Business District

Auckland City Council partnership with Kordia to provide CBD WiFi access using Council buildings and structures

Options for councils

What options can councils explore in this area?

Issues to consider:

In order to establish some neutrality or priority of access for suppliers a number of factors may be considered:

- (I). Environmental impact
- (II). Fulfilment of Council's own broadband requirements
- (III). Adherence to an "open access" network policy
- (IV). Level of community benefit being provided in accordance with desired Community Outcomes
- (V). The requirement for further competition etc
- (VI). Some further things that need to be considered:
- (VII). Suppliers will need some assurances (license agreement) of being able to occupy or use the facility on an extended basis
- (VIII). Establishment of legally sound policy
- (IX). Variations on what is permissible for differently zoned areas
- (X). Consistency of policy across Council in the region
- (XI). Ownership and control of the asset may not always be that clear and permissions will be required for assets not directly controlled by Council
- (XII). Alignment, condition and location of any disused ducting system etc for use to provide telecommunications services for the required end users or investor.
- (XIII). The cost of converting some of these assets to a useable state however needs to be understood as this may be prohibitive and render the offer uneconomic.
- (XIV). Inconsistencies in treatment of infrastructure ie councils could allow some infrastructure to be used but not other and this will vary from council to council

Legal implications

Legal implications to go here.

Guidelines for good practice

1. Establishment of a Council policy to allow the usage of disused ducting systems for installation of telecommunications cables.
2. Establishing terms and conditions for use of assets to ensure fair allocation of process and alignment with Council broadband infrastructure objectives.
3. Council's controls access to Council owned assets through a tender process.
4. Development by councils of a standard policy that would enable access to council owned infrastructure.
5. Development of a standard template to use for the application of a license to occupy council owned infrastructure by a supplier.
6. Development of a consistent set of conditions under which a council would issue a license to occupy

5. Shallow or Micro Trenching

Using shallow trenching techniques for the laying of fibre optic cable can be a lower cost option than normal trenching and as such is appealing to start up companies and also larger telcos under certain conditions. The downside is that generally this technique has a higher maintenance cost due to cable vulnerability and subsequent alterations required.

Council currently are reluctant to allow this technique to be used but a number are considering the benefits and preparing policy and specifications for this.

Current Practice

Information on current practice with regards to micro trenching to go here

Examples

Wellington City Council- Need to get information from council

Porirua, Hutt City and Upper Hutt City- Smartlinks 3- Follow up with David Haynes

Options for Councils

- (I). Micro trenching on non busy roads and footpaths
- (II). Micro trenching in the berm of the road as opposed to the footpath.

Issues to consider:

- (I). Where the majority of the cost is in the surface reinstatement, then the depth of the trench, whether 300mm or 600mm, does not make much difference. Full surface reinstatement may be required for relatively new surfaces.
- (II). Usually requires a case by case approval/analysis process to assess which situations this may apply to.
- (III). Future surface upgrades may require the removal or relocation of the facility at possibly additional cost to Councils and the participation of the other utility provider.

Legal Implications

Legal implications go here.

Guidelines for Good Practice

1. Exploring areas where micro trenching could be a viable solution for example in residential as opposed to commercial centres, on side roads as opposed to main street.
2. Being clear about areas where it is not a viable option
3. Developing a micro trenching policy in conjunction with the roading engineers.
4. Having the micro trenching policy embedded into the council's road engineering standards.

6. Building access and wiring

A significant cost component for establishing a FTTH or FTTP network is the lead-in access to buildings. The lead-in is the section of cable/duct between the main street ducting system and the building and includes building penetration. Establishing these lead-ins can be a long and expensive process and building owners can often object on the grounds of maintaining building integrity etc. Once these lead-ins are established, the owner of that lead-in is also unlikely to allow the sharing of this with other suppliers.

A further problem then exists of ensuring that the building itself has an internal data cabling system capable supporting high speed connectivity also arises.

These issues are relevant for both domestic and commercial building

Current Practice

Examples

Auckland City Council is currently trialling a joint ownership arrangement for lead-in to commercial building for new constructions. Under this model the Council and a number of other network operators share construction, ownership and maintenance costs.

The Auckland CC is also investigating policy to ensure buildings are adequately wired for modern broadband services

Options for Councils

- (I). Establish a joint ownership policy for lead-in to commercial building
- (II). Ensure adequate lead-in ducting is provided in all residential new development.
- (III). Ensure that as part of the building consent process, adequate provision is made for high speed broadband networking.

Issues to consider

Legal Implications

Any legal implications go here

Guidelines for good practice

7. Incorporating telecommunications into the District Plan and LTCCP.

As there is no legal requirement for local government to ensure the provision of telecommunications services often the District Plans are completely silent on any requirement for telecommunications services to new subdivisions and infill housing developments. This leaves the door open for developers to avoid this cost and often creates frustration and additional cost for new property owners.

Policies across a region are often inconsistent; this does in some cases cause frustrations and in some instances creates inefficiencies and confusion when a network operator is planning works across adjacent district boundaries

Current Practice

A number of regions are working collaboratively to harmonise these inconsistencies and develop policies which is based on the some of following principles:

1. Always making a statement on the requirement for telecommunications infrastructure for new development work.
2. Making the statement of requirements consistent across a region.
3. Ensuring that the requirements are consistent with the region's broadband vision for the future

Long Term Council Community Plan

A quick scan of many LTCCP highlights the absence of any plans for ensuring that the region has access to modern telecommunications infrastructure as this has not been recognised as a traditional responsibility for Councils. Further observation shows a disconnect between the legislative framework and the desired "Community Outcomes" as a significant portion of them have some dependence, or can be significantly enhanced through the availability of broadband infrastructure at an affordable level. The dilemma for Council is however that their LTCCP provides notification of where Council intends to invest in the community and investment in telecommunications infrastructure is likely to cause significant concern by the community.

Example:-

A clear example from the Kapiti Coast is where the "Outcome" sought is that "there is increased choice to work locally." This is further expressed as an objective for the region "that there is appropriate infrastructure (including communications infrastructure) in place that encourages business set up and provides certainty of supply of services for businesses."

Options for Council

- (I). Make Telecommunications planning a fundamental part of the councils infrastructure planning framework.
- (II). Work with industry to develop a telecommunications asset plan for the community

Issues to consider:-

Legal implications

Guidelines for Good Practice

1. Having a clear sustainable statement of requirements for broadband infrastructure in the District Plan
2. Establishing consistency of policy across District Plans with a region.
3. Establishing a direction for broadband development within the LTCCP based on community values
4. Some of the key principles being adopted are:
 - a. Inclusion of broadband infrastructure development objectives and action plan to meet the Community Outcomes where appropriate.
 - b. Consistency of consent requirements across the region's Councils
 - c. Is consistent with the long term vision of fibre cabling to all homes and premises.

8. Creating public private partnerships

The creation of partnerships with suppliers for the development of infrastructure is not new for Local Government.

Current Practice

Although examples are not as common for telecommunications infrastructure development, some successful historical examples exist. These have generally been established to meet a specific perceived need at the time.

Examples

The following examples are useful to reflect on:

1. Community Trust of Otago with Telecom NZ in the establishment of broadband services to Otago schools and some rural communities. Also included the development of the SchoolZone service. (a portion of the capital investment underwritten by the Community Trust of Otago based on level of service uptake)
2. The provision of broadband service from a number of Telecom exchanges in the New Plymouth/Taranaki region (a portion of the capital investment underwritten by the Venture Taranaki based on level of service uptake)
3. Provision of wireless broadband to all of Southland by Woosh Wireless (direct subsidy from Venture Southland, MOE/Probe Project and NZTE)
4. Project PROBE central Government project (MOE/MED) to get broadband networks extended to cover all schools and associated rural communities

(provision of a grant by Government to offset capital investment by various telecommunications suppliers under a tender process).

5. Wellington City Council and Citylink development (Council initial shareholder contributing minimal cash and access to overhead trolley bus catenaries).

Further examples currently exist as a result of round one of the Broadband Challenge fund. A brief overview of these projects is provided in the Broadband Challenge Know How Guide

Options for Councils

Generically a number of possibilities exist for Local Government with much of the decision being dependent on sources of funding and the purpose of the project. Partnerships may be established for long term enterprises or can be used for specific short to medium term projects.

These are summarized as follows:

1. *The underwrite model* (Example of Taranaki and Otago Net)

Project is underwritten to guarantee a level of security around expected revenues/returns for the supplier. For simplicity, this often translates to the number of customers created over a specified period).

May leave Council exposed as they may have little influence on the outcome.

2. *Direct subsidy model* (e.g. Project Probe)

- Very useful for large capable organisations/suppliers where little risk is involved.
- Simple and effective operate
- No continued control beyond the initial contract period.

3. *Non cash contributions from Council* (not directly financial) (e.g. West Coast Punakaiki fibre)

- Needs to be a formal agreement in place
- Of value where Councils can smooth the way and work more efficiently in certain aspects of the construction work such as road openings.
- Value of contribution needs to be agreed

4. *Partnership model*

The Council can assist by reducing the cost of installation through providing access or use of community owned infrastructure or leveraging off Councils works such as;

- a. Road openings and trenching (e.g. Inspire Net/Palmerston North)
- b. Use of Council installed and owned ducts by a network operator
- c. Land access – rights of way, farm land, reserves etc
- d. Use of overhead structures
- e. Co-location and use of Council owned buildings and sites
- f. Sharing of infrastructure or joint investment.

Issues to Consider

Legal Implications

Guidelines for good practice to encourage supplier investments

Some of the things commonly being considered by NZ local authorities and municipalities overseas to encourage investment in broadband infrastructure by the private sector are;

- Creating consistent and favourable policy and making Councils easy to do business with.
- Aggregating Council demand
- Aggregation of other demand from education, Government, health, business sectors etc.
- Access to council owned infrastructure/buildings
- Installation of “open access” ducts
- Creating a core fibre network
- Access to high sites (buildings and hilltops) for radio transmission
- Provision of a central peering point
- Market stimulation
- Council can play a significant role in market stimulation through promotional events and education

9. Establishment of industry collective purchasing agreements.

Demand aggregation (Building the market)

While demand aggregation is an essential element of any proposal it will be dealt with more fully in the Know How Guide in the context of establishing a degree of certainty of a customer base for an Urban Fibre Network. None the less, in the context of understanding the potential benefit of any project, having some degree of insight as to the size of the potential beneficiaries of a project is essential.

Current Practice

Depending on the nature of the project, demand aggregation can be a significant portion (30% to 50%) of the work effort required to get any project through to the financial approval stage. The State Services Commission is spearheading a project on identification of potential state sector demand through the provision of mapping tool and identifying major telecommunication infrastructure and potential state sector customers. While this is still under development it may be of value for Councils to explore and use to generate feasibility studies for projects. The SSC Demand Aggregation tool and information can be accessed at:

<http://www.broadbandmap.govt.nz/>

Assessment of rural sector demand

While Telecom has an intimate understanding of the number of rural customers unable to access broadband, it does not commonly go out of its way to get an accurate

assessment of the actual demand on the basis that the marketing effort is prohibitive and the cost of upgrading the infrastructure generally unviable. While direct marketing to the rural sector has been successful in a number of notable occasions it is generally not practiced by any service provider on the grounds of the unjustifiable resources required to do so. Customers wanting to be connected may apply for connection from an operator but if the service is unavailable very little action is taken.

Examples

Options for Councils

- (I). Undertake a regional stock take to review the quantity and location of rural residents keen to sign up for service.
- (II). Establish a data repository where rural residents can register their interest to sign up for a broadband service.

Issues to consider

Legal implications

Guidelines for Good practice

10. Installation of “open access” ducts

The installation of an open access ducting network has been seen by some Councils as a means to reducing the cost of entry to the market for network operators to either provide alternative urban fibre networks or extend the reach of existing networks into areas which are deemed not commercially viable. Care would be required in duct design and the allocation of space within the duct. For security and operational maintenance reasons most suppliers will be unwilling to share duct space unless subducting has been provided.

Current Practice

Examples

Options for Council

A “master plan” needs to be established to determine what customer base is being targeted and what involvement, and perhaps financial assistance of initial anchor tenants, will ensure sustainable future development.

The Council could lease the space within the ducts for a network operator to install fibre cables and/or establish their own networks and services.

Issues to Consider

Legal implications

Guidelines for Good practice

11. Creating a core fibre network

Creating an alternative core fibre network within an urban area will create a platform upon which network operators could provide the networking switching and management electronics to service their customer base. In this model, fibre cable or fibre pairs are leased directly to network operators for their exclusive use. The network should have a cable access and aggregation point such that allocation and recording of fibre pair usage can be adequately maintained. [Ref. CCNL model]

Current practice

Broadband Challenge Know how guide reference here

Examples

Northshore City Council

Christchurch City Council- Christchurch City Networks Limited

Hutt City, Upper Hutt, Porirua City- Smartlinx 3

Options for Councils

Some Council have established an initial fibre network for their own use and may be reluctant to share this infrastructure with “customers” outside of Local Government. This is generally to avoid contractual obligations for service maintenance, management and reliability.

One way to mitigate this risk is to appoint a network operator which will not only service the needs of the Councils but also create a commercially sustainable networking business while still fulfilling the objectives of providing lower cost high speed connectivity to the larger community. (Ref: Hamilton CC and Liteup)

Issues to consider

Legal implications

Guidelines for good practice

- Assessment of rural demand
- Relationships and coordination with suppliers

Some of the key principles being adopted are:

1. Undertake a regional stock take to baseline the current coverage and uptake of broadband services, the value it brings to key industry sectors and identify any opportunity for further economic development and improved social wellbeing within a region. Existing supplier cooperation is useful in this exercise
2. Use the stock take information to develop a Regional broadband Plan
3. Establishing a “regional” coordinator within Council to maintain relationships with suppliers.

Section 3 Industry Policies and Practices

(Comment: Section to be written by TCF)

Links to Key documents

1. Digital Strategy: www.digitalstrategy.govt.nz
2. The Broadband Challenge know How guide www.digitalstrategy.govt.nz
3. Councils in a Digital Age: www.lgnz.co.nz.
4. The Telecommunications Act 1991 www.legislation.govt.nz.
5. The Resource Management Act 1994 www.legislation.govt.nz
6. Local Government Act 2002. www.legislation.govt.nz
7. The Commerce Act www.legislation.govt.nz
8. The Commerce Commission www.comerccommision.govt.nz.
9. *Local Government New Zealand* www.lgnz.co.nz
10. The Telecommunications Carrier's Forum www.tcf.co.nz

Glossary- Referenced from Broadband Challenge Know How Guide

Bandwidth:	The range of frequencies passing through a circuit. The greater the bandwidth the more information can be sent over the circuit in a given time.
Broadband:	Wideband technology capable of supporting voice, video, and data.
Ethernet:	The most common Local Area Network (LAN) technology in use today. All stations on the LAN share the total bandwidth. These speeds range from 10 Mbps (Ethernet), 100Mbps (fast Ethernet), or 1000Mbps (Gigabit Ethernet)
Fibre (optics):	A transmission medium consisting of glass filaments. Light beams generated by a laser to carry data over the fibre.
Interface:	A shared boundary with common physical interconnection characteristics.
IP Address:	Known as an Internet address. This is a unique stream of numbers that identifies a computer or TCP/IP network. The format is a 32 bit numeric address written as four numbers from 0-255 separated by full stops.
Laser:	A device that transmits an extremely narrow and coherent beam of energy in the light wave spectrum.
Narrowband:	(As opposed to Broadband) Digital communication at less than 64 kilo bits per second (kbps).
Network:	A series of nodes or stations connected by a communication channel, in this case a fibre optic cable.
Physical Layer:	The OSI layer describing the electrical, mechanical and handshaking procedures over the interface connecting a device to a transmission medium. Typical examples are X.21, G703 and RS232 protocols.
Unlit fibre:	A fibre in its raw state i.e. not transmitting information in the form of data. Dark fibre is a similar term that relates to the physical characteristics of an unlit fibre.
OAN:	Open access network