



Western Bay of Plenty
District Council

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Section 32 Report for Broadband

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Provision for Broadband

A full assessment of the options around the provision of broadband and Councils role in this are covered in the Issues and Options Paper which was presented to the Western Bay of Plenty Management Board and Council Committee and is dated 30 April 2008 (see Appendix A). The decision made as a result of this paper was to proceed with including the provision of high speed broadband infrastructure into the District Plan as a mandatory requirement for new subdivision. Any subdivision under 2 lots in the Rural 1 and 2 zones are exempt from this requirement.

This rule provides a link into the relevant Development Code specifications which requires the installation of ducting for high speed information transfer cables to be installed at a later date. This serves to future proof new subdivision in the District by enabling broadband infrastructure to be installed when the other services are being laid into the ground. This is much more efficient than installing ducting at a later date.

It is therefore proposed to include the following rule in the Subdivision and Development Section of the revised District Plan:

Proposed Additions to the District Plan

Objectives

“Subdivision and development is that provides for and reinforces the existing built form and local character of an area”.

“Sufficient infrastructure capacity is provided to ensure the efficient and equitable provision of services to all land in the catchment”.

Policies

“Require subdivision and development to provide infrastructure and services to meet the reasonably foreseeable needs other land in the vicinity of the development”.

“Subdivision and development will provide trunk infrastructure including roading sufficient to service the surrounding catchments”.

Rule

12.4.8 Network utilities – electricity, telecommunication, broadband and gas

12.4.8.1 *The requirements for the provision of electricity, telecommunication, broadband and gas shall meet with the approval of the relevant network utility operator.*

12.4.8.2 *Adequate provision shall be made for the supply and installation of electricity, telecommunication, broadband and gas services in accordance with Council's Development Code.*

Except that:

The provision of broadband is not mandatory for subdivisions that involve the creation of 2 lots or less in the Rural 1 and 2 Zones.

Alternatives, Costs and Benefits

1. Quo – Do nothing option
2. Promote alternative means of broadband service delivery – wireless and Digital Subscriber Line (DSL) services operating over copper lines as currently exists
3. Require Fibre Optics Telecommunications Infrastructure by making high capacity information transfer infrastructure a requirement in within the Development Standards volume of the District Plan.

Option 1

Status Quo – Do nothing option

Costs	Benefits	Efficiency Effectiveness
May mean that when broadband is required in future the infrastructure will have to be installed by re digging trenches. This can be costly to a point where properties may miss out on having a high speed fibre broadband available to their home.	No costs on developers to install infrastructure and no cost on Council to maintain ducting.	It is not an efficient use of resources and time to install the broadband infrastructure at a later date when a core connection becomes available.

Option 2

Promote alternative means of broadband service delivery – wireless and Digital Subscriber Line (DSL) services operating over copper lines as currently exists

Costs	Benefits	Efficiency Effectiveness
Copper technology is limited in terms of the amount of information and speed at which is can carry information. Fibre technology does not have these constraints. There is common agreement within the telecommunications industry that fibre will be the predominant access technology for the foreseeable future.	Using the current copper system there is no need to install additional infrastructure. There are limitations to copper technology and those that do not have a fibre connection available are likely to disadvantaged in future.	While it may be efficient to use the current copper network this is a short term solution that is currently nearing its capacity. Copper may be suitable in the short term to link fibre networks to the home but in future there will be a demand for fibre to connect to each individual dwelling.

Option 3

Require Fibre Optics Telecommunications Infrastructure by making high capacity information transfer infrastructure a requirement in within the Development Standards volume of the District Plan.

Costs	Benefits	Efficiency Effectiveness
While there may be an increase in the upfront costs for the	New development will be future proofed so when a fibre	It is efficient to require the installation of broadband ducting

<p>developer this will be cost effective in comparison to installing the ducting at a later date. On vesting into Council there will be a maintenance cost involved with owning the infrastructure. These costs are likely to be recovered once the ducts are in use and may increase the likelihood the lots are sold – due to having the ability to receive fibre optic cables.</p>	<p>connection is available then high speed broadband can be made available. There will only need to be one trench dug and all services can be installed at the one time. The duct will be of a size so that telecommunication companies can later thread a fibre optic cable.</p>	<p>when a new subdivision is carried out. This will save time and money later when a core network has been developed and broadband becomes available in these areas.</p>
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Appendix A – Broadband Issues and Options Paper

Western Bay of Plenty District Council

Management Board

Issues and Options Paper for Broadband

Executive Summary

This report highlights the importance of considering the provision of high speed broadband within the Western Bay of Plenty District Plan. Broadband via fibre optic technology has significant social and economic benefits and is thought to be the predominant access technology for the foreseeable future. This has been recognised at both a government and local level with 7 Bay of Plenty Councils forming a group to drive the matter called Bay Broadband. This report looks at whether Council should consider implementing a mandatory requirement into the District Plan to install fibre optic ducting in all new subdivisions. To add such a requirement requires special consideration as there are a number of practical issues associated with creating such a rule. These are discussed further within this report.

1. Why Broadband?

Broadband is defined as:

'A system which enables many messages or large amounts of information to be sent at the same time and very quickly between computers and other electronic devices'.

It is considered that the demand for broadband is rapidly increasing locally and globally. A GDI study commissioned for Bay of Plenty Councils identified that the lack of broadband is an economic disabler and that New Zealand is lagging behind other OECD nations, New Zealand ranks 20th of 30 OECD countries for broadband connections.

For the Bay of Plenty area to remain internationally competitive and to assist in future economic growth there is an urgent need to recognise and provide for high speed broadband at both a higher core infrastructural level and a local broadband-to-the-home site specific level.

The Ministry of Economic Development has published a draft 'Digital Strategy' where it envisions *'New Zealand as being a world leader in using information and technology as a way to realise its economic, social, environmental and cultural goals, to the benefit of all New Zealanders'*. One of the proposed actions as a result of this strategy is to promote broadband friendly Councils which will contribute to the deployment of high speed broadband infrastructure.

Councils have begun to acknowledge this and are in the process of actively providing for broadband. Manakau City Council proposes to make the provision of high capacity information transfer infrastructure mandatory in all new Greenfield Subdivisions and

Wellington City Council is exploring options that will accelerate the penetration of high speed broadband services throughout the city.

It is therefore considered as a result of the GDI Broadband Business Case Study and the draft 'Digital Strategy' that local Councils have a responsibility to consider the provision of high speed information transfer infrastructure in both new developments and in existing urban areas.

2. Why Fibre Optic Technology

There are a number of options available for the delivery of broadband services. These include copper technology, satellite, fibre optic cables and to some extent wireless technology. Currently the majority of broadband is provided to households by copper loop technology.

This technology has limitations in terms of the amount of information it can carry and will become largely redundant in future. Bay Broadband which is made up of seven Bay of Plenty Regional and District Councils have highlighted that business and residential needs already exceed the limits of our existing copper network.

Wireless technologies which are often assumed to be an alternative to fibre based technology are limited in the amount and speed at which information can be transmitted.

Currently there are many individuals within the Bay of Plenty area which only have access to a 'dial up connection'. Dial up is a slow first access technology to the internet and as the size of the attachments to e-mails grow dial up access becomes more and more impractical. Rural areas also have limited access to any internet service in some areas.

It is considered that using the internet without broadband will become impossible and that broadband will be the predominant access technology for the foreseeable future.

3. Benefits of Broadband via Fibre Optic Cable

Broadband is a single platform and single infrastructure form which can deliver all the existing telecommunication systems that exist today and into the future. Broadband is effectively as one stop shop for communication and information transmission.

Currently different communication types are delivered through different telecommunication services, telephone is provided through an existing network, television and radio through radio transmitters, satellite and broadband through the existing copper technology. Having a separate network for each communication service results in unnecessary duplication.

Due to the amount of information and speed broadband is capable of all these existing services will ultimately be able to be contained within the one system.

In addition to this there are now broadband technologies emerging far beyond basic e-

mail and internet browsing which will have huge positive effects on the economy. These new technologies are dependent on the provision of high speed broadband.

Some of these technologies include:

- 'Voice over Internet Protocol (VoIP) which is a very low cost national and international telephone service which largely bypass the current established telephone networks
- Video and Audio conferencing – which are also very low cost compared to traditional services
- Remote Medical Diagnostics and Telemedicine which has huge positive implications on the quality and availability of health care. Examples include the ability to diagnose and treat patients using high speed internet access and the ability for doctors to send and receive medical images from outside locations to their hospitals.
- Remote Education/Distance Learning – enables students from any geographical location to take advantage of educational opportunities. Enables the student to see and interact with professors in real time and give the poor, underprivileged or disabled an opportunity to learn without the need for travel
- Video on Demand - where users can download video content for immediate or delayed viewing
- High Definition TV - will eventually replace coaxial or satellite delivered pay TV
- Shared Resources between Councils – it is proposed to connect Tauranga City and Western Bay of Plenty Councils via fibre to aid in the secure storage of valuable information
- E-Government - allows the interaction between and government more convenient and allows governmental departments to share information.

4. Economic Benefits of Broadband

A 2005 Study from the Massachusetts Institute of Technology titled 'Measuring Broadband's Economic Impact' compared 22 000 communities of which half had broadband available and half that did not (and controlled for other variables such as income, education, urban/ rural differences). The report found the follow economic benefits as a direct result of broadband availability:

- Employment Growth – the presence of broadband added 1% to the employment growth rate.
- Increased house prices in broadband enabled communities
- New business creation broadband added 0.5% to their new business growth rate
- Enhanced new IT business

Telecommunications Research Australia estimated that by 2015 broadband will add over \$20 billion to the Australian Economy. This will be through organisations that will use broadband as a critical element in their business model.

Manukau City Council surveyed 1422 businesses with their district and found that nearly

all business are connected to the internet and up to 72% of the businesses surveyed had a website.

In terms of quantifying the economic benefits of providing broad band a draft New Zealand Institute study estimated that the country stands to loose up to \$4 billion a year if installing a fibre based high speed network is not addressed with urgency.

This study highlighted that there is a significant cost to waiting. The longer that New Zealand waits the more economic value it will forego meaning New Zealand should approach the investment in fibre with urgency.

5. How can Council provide for Broadband?

There are a number of levels at which Council can get involved with the provision of broadband. These are as follows:

5.1 Core Network

It is proposed to establish a Core Fibre Optic Network which will be connected in two places to a backhaul network one based in Auckland and one in Wellington. This will mean that if the wholesale connection from Wellington was severed for some reason there would be a back up connection to Auckland. These Wellington and Auckland connections will be connected to the global network.

The main core fibre optic network will compromise of a duct between three regional centers, Tauranga, Whakatane and Rotorua, with Kawerau picked up along the route and spurs to other towns and settlements as appropriate.

There is an opportunity for a reduction in costs during the development of the core network as there are road works proposed to be carried out over the next 5 years where the marginal cost of duct instillation is a fraction of the costs of installing ducts as a specific project. This will mean that the installation of the ducts will be a piecemeal process. The proposed cost of the Bay of Plenty core network is estimated at \$17 million and a committee has been formed to manage this process which is made up of a the 7 Bay of Plenty Councils (BOPLASS).

5.2 Nodal Connections

Once the core infrastructure is in place nodal connections can be used to transfer the information from this point to surrounding areas. These nodes could be wireless, fibre or copper. By providing fibre to a node the copper loop can be shortened and makes fast broadband connections available as an interim solution and wireless can be used over smaller distances and be effective in the short term. Ultimately fibre to the home will be needed.

5.3 Local Infrastructure

This deals with fibre technology to the home. Council is in a unique position to associate the provision of a fibre optic network with the installation of their core infrastructure such

as water, waster water and roading. This would result in the most cost effective way to install the network as opposed to carrying out a separate duplicate exercise.

Both Tauranga City Council and Western Bay of Plenty District Council are currently in the process of reviewing their District Plan and current Codes of Practice. Part of this process could involve the consideration of how best to provide for broadband within new development and ways in which existing urban areas could be serviced.

6. Proposed Action

One possibility is to ensure all new Greenfield subdivisions recognise and provide for high capacity information transfer infrastructure as part of the subdivision consent process. This would involve the creation of a rule requiring compliance in order to obtain subdivision consent as part of the service requirements. This would complete the most site specific portion of the provision of broadband and enable fibre to the home to occur.

Currently in the Code of Practice the only reference to Broadband is within Section 10.2.3 – Telecommunications which states:

'The need to provide broadband internet cables will be considered when designing the subdivision'.

A suggested change is that:

'all allotments on a subdivision must be provided with a connection to an adequate fibre optic telecommunications network'.

This will mean ducting in accordance with minimum design standards should be thrust or installed in open trenches when other utility services are installed such that cable can be drawn or blown in future and that this be mandatory requirement for resource consents.

7. Alternatives

1. Status Quo – Do nothing option
2. Promote alternative means of broadband service delivery – wireless and Digital Subscriber Line (DSL) services operating over copper lines as currently exists
3. Require Fibre Optics Telecommunications Infrastructure by making high capacity information transfer infrastructure a requirement in within the Development Standards volume of the District Plan.

8. Issues

There are a number of issues associated with making the installation of broadband infrastructure a mandatory requirement and these issues include the following:

9. Issue 1: Infrastructure Ownership and Management

While Council is not planning on being a broadband provider it is considering providing the PVC pipes (ducting) which fibre optic cable can then later be threaded through by telecommunications ('telecos') companies. This includes both the core triangle and local connections. There is an issue with ownership of this infrastructure. Who will own and maintain the infrastructure?

Options include

Council Ownership

The infrastructure will be vest with Council as per the current situation with infrastructure such as stormwater, sewer and water.

Telco Ownership

Council could formally consult with industry partners for their help in how to best address this option.

BOPLASS Ownership

Bay of Plenty Local Authority Shared Services (BOPLASS) and Bay Broadband an operational company could maintain ownership of the ducting and later negotiate with telco companies.

10. Issue 2: Reliance on Core Infrastructure

Developers may be reluctant to support such a requirement when a core network has not yet been established. While the core network is identified as an integral part of providing for broadband it has not yet been implemented.

Options include

Wait for Core Network

A plan change could be made to the District Plan at a later stage which will add the mandatory requirement to provide broadband infrastructure in all new subdivisions. This may mean some large subdivisions will miss out on the cost effectiveness of installing the ducts along with other infrastructure.

Implement requirement in anticipation for Core Network

This means subdivisions will be equip to receive broadband to the home once the higher level infrastructure has been put in place. This may be a more attractive option for developers if there is a guarantee that the wider connection will be established within a reasonable timeframe as opposed to 20 years into the future. There is a possibility in some areas even if a core network is established then there will still be large costs

involved in getting fibre from the core to the subdivision this may be the case in the townships in the Western Bay of Plenty District such as Katikati, Omokoroa and Waihi Beach.

It is therefore considered that further investigation needs to be made into the timing of the core infrastructure and the likelihood of this meaning that these subdivisions will be able to be serviced within a reasonable timeframe.

11. Issue 3: Western Bay of Plenty Townships are widely dispersed and not close to core infrastructure

While it may be a good idea to install ducting in to Greenfield subdivisions close to urban areas where connection to the core network would be possible this becomes harder in to more isolated areas. There would potentially be a long period between installing the core network and having an available fibre connection in many of the Western Bay Townships. It may not be considered to be practical to implement a mandatory requirement in these townships.

12. Other Issues Include:

- 12.1 *Infrastructure may be unused for a long period which could result in damage*
Once the ducts are installed if they are damaged it would cause time and funds to fix. GIS points could be used to record the duct location to prevent accidental damage.
- 12.2 *The cost to developers and the likelihood that they will support and provide broadband infrastructure when it may not be used till a long time in the future.*

While there are positive economic gains from the provision of high speed broadband including increases in property value this may not be perceived as resulting in a positive economic gain by developers in the short term. This again is dependent on when the ducts will be able to be used to convey fibre optic cable. If it was to be a period of 2 years then potential gains could be visualized, however if the ducting is not able to be used for another 20 years then developers may not be supportive in funding the installation of ducting.

Consultation with effected parties including developers should be carried out to better assess the situation.

- 12.3 *Is fibre the technology of the future?*

It should be noted that the ultimate objective is the availability of a network that can deliver performance that removes speed as a constraint. Although it currently seems very unlikely, investigations may show that technologies other than fibre will be able to achieve this.

- 12.4 *Need for developed urban areas to be connected with broadband*

Existing developed areas can be connected to the core network through existing infrastructure such as copper and wireless technologies. This would be a short term solution and would not achieve the ultimate goal of providing fibre to the home.

There are possibilities to install ducting in new commercial buildings or when existing buildings are redeveloped. Ducting can also be installed at the same time that other telecommunication services are installed in new roads or roads are being re-laid, or when other utility services are laid such as water, waste water and gas.

13. References

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Massachusetts Institute of Technology, Measuring Broadband's Economic Impact, 2005

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Rule

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