

# **Venture Southland Submission to the Ministry of Economic Development relating to the *Discussion Document on Telecommunications Service Obligations Regulatory Framework.***

**15 October 2007**

Venture Southland thanks the Ministry of Economic Development for the opportunity to submit on matters relating to Discussion Document on the Telecommunications Service Obligations Regulatory Framework.

Venture Southland wishes to speak to this submission.

## **Submitter's legal status**

Venture Southland is a formal legal entity in its own right under Section 114(s) of the Local Government Act 1974.

Venture Southland was formally constituted on 9 June 2001 by way of a Heads Of Agreement signed and executed under seal by the Invercargill City Council, the Southland District Council and the Gore District Council.

## **Submitter background**

Venture Southland has long recognised that an efficient telecommunications service is vital to the well-being and further development of Southland. To this end, Venture Southland has taken a keen interest in how to best ensure that such service is made and maintained, first submitting to the Fletcher inquiry in 2000, and then in 2002 investigating solutions to provide ubiquitous, affordable and universally priced broadband Internet service to Southland. The result of this work is described in the seminal report, "Blazing a Trail to the Information Highway"<sup>1</sup>. This report provided a comprehensive roadmap for the engineering and regulatory implementation of ubiquitous broadband Internet service and helped set the scene for the Government's Project PROBE.

Venture Southland then was able to harness Project PROBE and the MED's Major Regional Initiative Fund to conduct an open tender and as a result meld a partnership with Woosh Wireless to currently provide affordable broadband service to an estimated 96% of all Southland dwellings.

Key staff within Venture Southland have been actively involved in rural and remote telecommunications activities for some 26 years, including designing, planning and facilitating the development of rural telecommunication networks in Southland and have actively advised on rural and metropolitan network investment in other parts of

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[http://www.southlandnz.com/sites/southlandnz.com/images/venture/major\\_projects/broadband/docs/blazing.pdf](http://www.southlandnz.com/sites/southlandnz.com/images/venture/major_projects/broadband/docs/blazing.pdf)

New Zealand and overseas, including work for the International Telecommunications Union.

## Research background

Venture Southland has a thorough understanding of Southland telecommunications needs and requirements based on 96% confidence level ( $\pm 4\%$  margin of error) sector research undertaken in September 2001 in the following key areas<sup>2</sup>:

- Education – Survey of 270 primary and secondary schools,
- Farming – Survey of 1000 randomly selected farmer
- Tourism – Survey of 964 tourist operators 212 responses
- Health – Survey of 100 randomly selected General Practitioners
- Residential – 600 telephone interviews Otago – Southland Area

This research has been further updated as Venture Southland has facilitated the roll out of \$8.5million rural wireless network and actual network costs have been able to be incorporated in economic modelling.

Recently Venture Southland has conducted rural sector research consisting of a postal survey with 368 responses, a 20% response rate. A public meeting in Eastern Southland, with over 200 rural customers present, has been held and focus group analysis investigating teenager perceptions of telecommunications (October 2007) have also been undertaken<sup>3</sup>.

## Submission

Our submission falls into two parts: the first is to demonstrate that the scope of the review is too limited in its definition of what comprises ‘basic’ telecommunications; and the second is to suggest a contestable model for the TSO provision that would, we believe, promote cost effective, efficient and ubiquitous affordable broadband Internet service in rural areas.

## Defining ‘basic’ service

In the foreword to the TSO Review, the Hon David Cunliffe writes:

*... your views are welcome on whether the draft proposals outlined in this paper will achieve the purpose of producing a revised TSO that is relevant in 2007 and going forward, by ensuring New Zealanders continue to have universal access to ‘basic’ telecommunications service.*

There is a disconnection between this statement and the remainder of the document, for the review seems primarily focussed on how to adapt a copper cable infrastructure designed for fixed line telephony to provide broadband Internet service, and yet in 2007 ‘basic’ telecommunications service encompasses much more than this.

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<sup>2</sup> <http://www.venturesouthland.co.nz/sections/Venture/majorprojects/broadband>

<sup>3</sup> <http://www.venturesouthland.co.nz/sections/Venture/majorprojects/broadband>

To illustrate this point, it is useful to examine the penetration of telecommunications services in New Zealand and compare their influence on New Zealanders:

<b>Service</b>	<b>Lines per 100 inhabitants</b>
Mobile cell phones	Over 100
Percentage of population within cellphone coverage	98%
Fixed line telephone	42.91
Internet users	78.77
Broadband users	14.18

#### **Telecommunications services penetration in New Zealand<sup>4</sup>**

From the above table, it can be easily deduced that there are more cell phones than there are New Zealanders and that there is less than one fixed telephone line per dwelling. It is reasonable to conclude that cell phones are at least as important, if not rather more important, than fixed line telephones for New Zealanders. In this light, it is disconcerting to realise that some 80,000 New Zealanders (equivalent to almost the entire population of some of our provinces) live in areas outside of cell phone coverage.

If the revised TSO is to serve into the foreseeable future, then it at least needs to accommodate the current needs of our next generation. In order to establish what telecommunications services should be included within the TSO structure, we conducted two focus group studies and one in-depth survey of Southland teenagers (See Appendix 1). The opinions of all participants were extremely consistent, so that the findings can be regarded as highly credible. The key findings fly in face of conventional wisdom and indicate that even our own thinking of five years ago is dated in terms of how modern day telecommunications services are used and regarded. We found that for teenagers today:

- In many cases, fixed line telephony has little relevance and is seldom used,
- Email, even when accessible, is regarded as unresponsive and old fashioned; it is usually reserved for communicating with “old people”,
- Ability to send and receive SMS messages with cell phones at all times is considered essential,
- Interactive, permanently on-line social networking through the Internet (using such sites as Bebo) is vitally important in how youth express themselves, are perceived by their peers and how they communicate amongst themselves,
- High speed access to Google, file sharing with Limewire and instant messaging with MSN are all considered essential for success at school, both academically and socially.

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<sup>4</sup> From <http://www.itu.int/ITU-D/icteye/DisplayCountry.aspx?countryId=173> apart from cellphone penetration which is deduced from the Vodafone website, <http://www.vodafone.co.nz>.

Those “knowing adults” who may consider that Youth’s need to be permanently connected is merely a passing fad, or is trivial overlooks the importance of how Youth nowadays operate, communicate and work. For instance, we discovered that those youths who live in rural areas and are deprived of cell phone and broadband Internet coverage at home are socially ostracised by their peers. We learnt of some youths who would roam all around their parent’s farm desperately looking for locations from which they could SMS their peers. For these youth, Marshall McLuhan succinctly sums up the situation in his famous axiom, “The media is the message”<sup>5</sup>.

What the TSO review also overlooks is that 4G wireless technology with its slogan of “ABC” (Always Best Connected) is set to become entrenched as the next, all-encompassing telecommunications mode. 4G will incorporate nearly all of the current wireless technologies, including Bluetooth, UMTS, WiFi and WiMax and will likely further remove the necessity for fixed wire technology for other than “penultimate mile” solutions. Given that it roughly takes 8 years for a telecommunications technology to move from appearing in academic journals to mainstream use, one can expect that 4G will become available in the next 5 to 6 years. The TSO must be forward thinking enough to accommodate 4G. To this end, it is important to recognise that coverage for the existing cellular technologies must be integral to any new TSO requirements, for cell phone service is a ‘basic’ service.

Venture Southland submits that the 2007 definition of the TSO must reflect a contemporary view of what is regarded as a ‘basic’ telecommunication service, which must give rise to a responsible stewardship and network reinvestment model.

## **Fundamentals of telecommunications network service**

Most telecommunications experts will be familiar with Metcalfe’s Law, which describes how the utility (or value) of a network increases by the square of the number of its users (because, unlike service utilities, telecommunications networks provide service to both the calling and called parties).

There are two corollaries to Metcalfe’s Law that are not so well known:

1. Metcalfe himself observes<sup>6</sup> that his law points to a critical mass of connectivity after which the benefits of a network grow larger than its costs. The number of users at which this critical mass is achieved can be calculated by solving  $C*N=A*N^2$ , where C is the cost per connection and A is the value per connection. The N at which critical mass is achieved is  $N=C/A$ . It is not much of a surprise that the lower the cost per connection, C, the lower the critical mass number of users, N. And the higher the value per connection, A, the lower the critical mass number of users, N.
2. Melody<sup>7</sup> shows that the economics of network expansion are such that the calling opportunity multiplier is always higher than 2, meaning that the unit costs of network extensions can be more than twice the telco’s average costs per customer before high cost subsidies need to be considered at all. The

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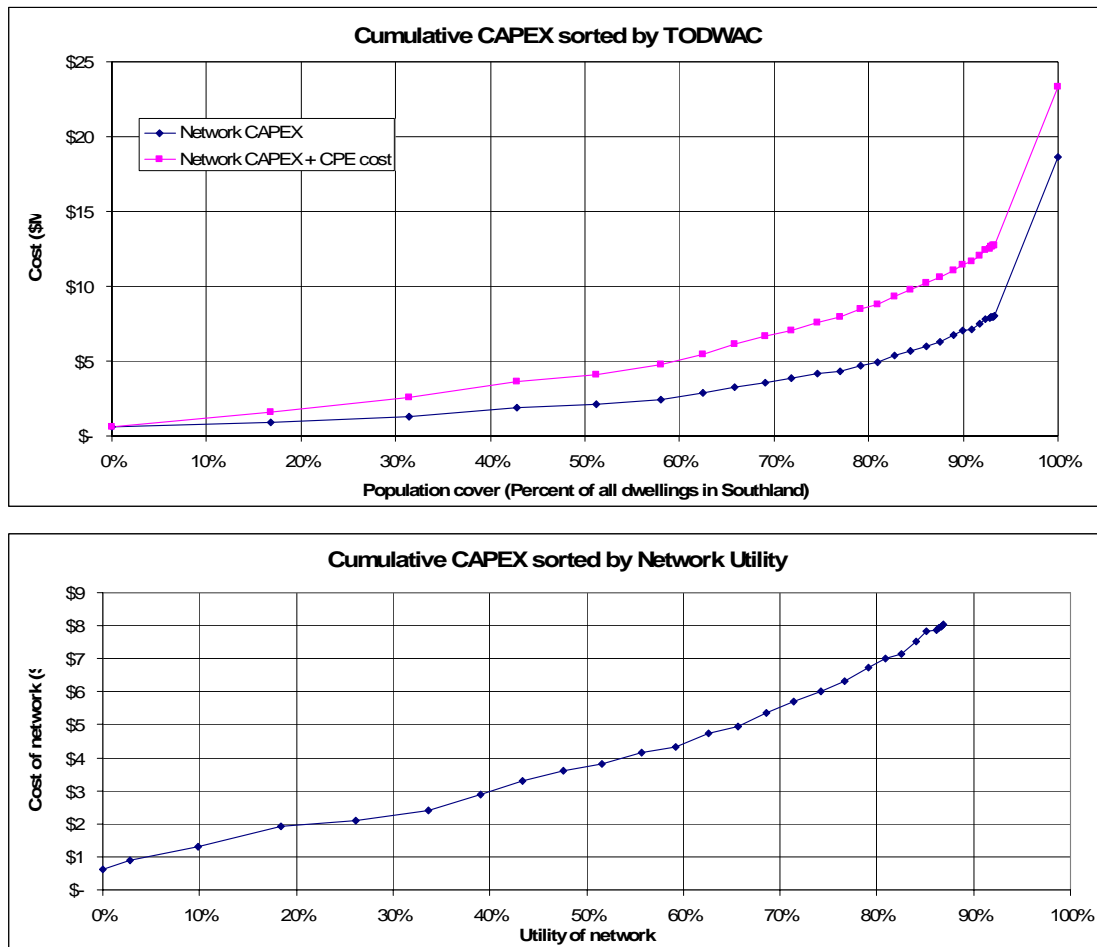
<sup>5</sup> H M McLuhan, *Understanding Media: The Extensions of Man*, (1964).

<sup>6</sup> <http://vc mike.wordpress.com/2006/08/18/metcalfe-social-networks/>

<sup>7</sup> W H Melody in "Telecom reform: Principles, Policies and Regulatory Practices, ed. W H Melody, Tech. Univ. of Denmark, 1997.

incremental revenue benefits to the telco will be much greater than the charges billed to the additional subscribers, as there will be increased calling by those already on the network to the new subscribers. When this is combined with the fact that rural and remote area subscribers generally use the network at a higher than average level and incur even higher charges due to the much greater proportion of long distance use, several times the average customer extension cost can be justified on a cost recovery, if not a profitable basis, when a network wide analysis is undertaken. This helps explain why universal service need not be a significant subsidy issue in most countries.

In Southland, we have been able to capture the costs of rolling out the Woosh Wireless network and are able to demonstrate that Metcalfe’s Law is approximately held to be true, as set out in Figures 1(a) and 1(b).



**Figure 1. Southland wireless broadband Internet network CAPEX, (a) as a function of coverage, and (b) as a function of utility as used by Metcalfe’s Law. Note that in 1(a), the last 5% of subscribers are provided with satellite service.**

The other well known law that applies to telecommunications is Moore’s Law, which states that semiconductors double in complexity every two years; it has been numerically accurate since 1965. The corollary to Moore’s Law is that the price of information and communications technology halves every two years. While Moore’s Law does not apply to copper, or fibre optic cables, it does apply to the equipment

connected to the ends of these cables. Thus, instead of any subsidy, or TSO contribution increasing each year in line with some, arbitrary inflation index such as the CPI, the TSO subsidisation should be expected to decrease in line with Moore's Law.

## **Contestable TSO model**

Venture Southland accepts that the New Zealand Telecommunications Service Obligation has been derived from what was formerly known as the "Kiwi Share" which was established in 1991 when Telecom was privatised. The objective was to place certain 'public good' obligations on Telecom New Zealand, aimed at offsetting the monopoly copper wire ownership held by Telecom New Zealand. The TSO, among other obligations, provided for free local telephone calling and set specific standards for the provision of voice and data services.

Recent developments associated with the deployment of ADSL (Jetstream) services has seen a number of rural telephone exchanges upgraded<sup>8</sup> in Southland which occurred rapidly following the announcements that a competitor telecommunications service provider would be entering the Southland market. This investment has mainly focused on urban service provision.

## **Rural telecommunications network economics**

The current sub-standard of the current rural fixed-line network in Southland has arisen from an almost complete lack of re-investment in the network since it was constructed in the 1980's. As a consequence of this lack of reinvestment, this network is now by and large beyond providing modern services. It also needs to be recognised that much of the rural reticulation planning for the Southland network from 1980 onwards was for the eventual implementation of ISDN, for which could be adapted for ADSL by upgrading the cable bearers to the remote distribution cabinets. While the network was so planned, in later years, this was never taken advantage of, and nor is there any evidence of an active upgrade programme, which in turn would enable greater network utility and functionality.

It has been calculated that the full allocated cost of a rural telecommunications fixed telephone line (including telephone exchange) is approximately \$4,500<sup>9</sup>. Allowing for 20 years book life for the cable (where most of the costs lie), this equates to an annual straight line depreciation of \$225 per connection.

We have been advised that Telecom New Zealand claim that 5,500 Southland telephone subscribers are loss making customers and that it is losing \$10,000,000 pa providing basic telephone services to these primarily rural customers. It should be noted that there are some 42,000 fixed telephone lines in Southland and so 5,500 lines represents some 13% of Southland connections and around 40% of the lines outside of the main centres of Invercargill, Gore, Bluff, Winton and Te Anau.

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<sup>8</sup> In fact, very little of the PSTN part of the now 20 year old exchanges have been upgraded in Southland. For the most part, rural Southland is served by NEC NEAX61S telephone exchanges that Telecom New Zealand engineers considered to be obsolete in their (confidential) 1995 network planning documents.

<sup>9</sup> Network Strategies Ltd, "Capital Investment in Telecom's Rural Network", Public Version Working Paper for MED, Network Strategies Report Number 27011, 14 May 2007,

If we can assume that monthly line rental is used exclusively to maintain and operate the local loop and local exchange- which appears reasonable as otherwise there would be cross-subsidisation of the toll tariffs- then Telecom New Zealand can expect some \$2,500,000 revenue from these subscribers that can be apportioned to providing and maintaining the local line, i.e. at total loss of \$12,500,000, or \$2,270 per subscriber is effectively being claimed by the incumbent.

If we allow that annual network depreciation accounts for \$225 per subscriber (which is just on 10% of Telecom New Zealand's supposed cost, and in principle essentially contributes towards the eventual replacement of the plant), then some \$2,000 each year remains for maintaining the network for each rural line. This seems extraordinarily high.

In passing, it is interesting to note that the claimed loss on Southland network is roughly Telecom New Zealand's annual capital expenditure for Southland during the 1980's, which was when nearly all of Southland's current rural network was constructed.

It is also worth noting that ITU averaged CAPEX for new telecommunications networks, taking into account all on-costs, is around \$US1,500 per line.

### **Local Loop Unbundling and de-averaged line CAPEX**

Local Loop unbundling has stimulated telco service provide investment in metropolitan areas, but it is widely recognised that it has created a major barrier for investment in rural infrastructure. It is also recognised that the de-averaging of subscriber line costs, as dictated by the Commerce Commission, has in turn provided an excuse to justify further non-investment in rural telecommunications infrastructure. It has also affected investment decisions by skewing commonly held telecommunications network investment models whereby the average network line cost is the basis of capital investment, rather than de-averaged costs.

We seek that the rationale and effects of Local Loop Unbundling and de-averaging on rural telecommunication networks be re-visited and dealt with in a manner that ensures investment will occur.

### **Next-Generation Networks (NGN)**

While Venture Southland enthusiastically support the introduction of the NGN throughout Southland, we are concerned that the review document deals with NGN issues in a too general manner. We note that there is much work being undertaken by regulators around the World<sup>10</sup> and that in dealing with the TSO, New Zealand does not limit itself and is able to learn from overseas experience. In particular, issues such as "net neutrality" must be adequately dealt with.

### **Key submission points**

The objective of this submission is to:

- Stimulate rural telecommunications investment.
- Improve the standards of rural telephone and internet service.

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<sup>10</sup> ITU Trends in Telecommunication Reform 2007: The Road to Next-Generation Networks (NGN).

- Ensure that the TSO is not seen as a ‘hand out’ of, but an investment towards improving the telecommunications infrastructure and in turn the lot of rural customers.

Telecom expects to be compensated for their perceived losses of \$10,000,000. To this end it is suggested that the following points form the basis of redefining the TSO:

- (1) That the standards required under the terms of the TSO are updated to meet a modern definition of a “basic telecommunication service”. Venture Southland submits that the 2007 definition of the TSO must reflect a contemporary view of what is regarded as a ‘basic’ telecommunication service.
- (2) That independent regional assessment be undertaken to determine the extent to which rural customers are loss making and to confirm TSO losses.
- (3) That the provision of TSO services be made contestable, allowing other service providers to tender for the provision of services to the perceived loss making customers.
- (4) TSO loss to be tendered and contracted for a period of 0-5 year Phase One, or an appropriate term, and that TSO standards to be specified and forward investment plan agreed.
- (5) If incumbent is not successful, that interim access be provided to these customers via the existing copper network.
- (6) That the contracted TSO service provider be encouraged to invest in new infrastructure to service rural customers to meet the specified standard, ie carrier grade telephony and specified standard of broadband service.
- (7) If service provision is met the TSO obligations should be extended for a further period of not less than 5 years, or as necessary subject to a negotiated terms surrounding the standard service and/or terms ing to appropriate commercial return on investment.
- (8) That the NGN be introduced in rural Southland as a matter of some urgency to replace exchange technology that is acknowledged to be obsolete.
- (9) We seek that the rationale and effects of Local Loop Unbundling and de-averaging on rural telecommunication networks be re-visited and dealt with in a manner that ensures investment will occur.

# **Appendix 1. A Young Person's View of Telecommunications in Southland**

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15 October 2007

## **1. Executive Summary**

Two focus groups and one in-depth interview were undertaken in September 2007. The objective was to gain an insight into teenagers' use of telecommunications in rural Southland.

To this end, a total of 24 teenagers participated, ranging in age from 14-17 years. Almost half the respondents lived in a rural area with the remainder living in the town of Gore.

The key findings are that modern teenagers wanted to be fully connected with each other at all times in a fully integrated fashion and that they have had to develop work-arounds to overcome significant pricing barriers to easy cell phone usage.

Youth are hungry to embrace new telecommunication technologies and expect ubiquitous, high speed, low cost universal communications at all times. These must include both cell phones and broadband.

Conventional views of telecommunications are no longer appropriate: telephones *per se* are not seen as important and while email is used, it is perceived as slow and generally reserved to communicate with "old people". Instantaneous messaging is much more strongly preferred.

There is also an indication that social and peer groups now develop based on a teenager's ability to communicate with others in the group by cell phone and through the Internet. As a result, some rural teenagers are now being excluded from the 'in group' and are becoming socially ostracised because they are unable to access broadband Internet and are without cell phone coverage at home and so have no ability to text and instantly communicate with peers after school.

## **2. Key Findings from Focus Groups:**

Key observations from the focus groups are now outlined.

### **Cell phone Usage**

- All participants had a cell phone, some had two phones (Vodafone and Telecom) to take advantage of pricing plans.
- Phones used mainly to text friends (Telecom \$10 text and Vodafone Best Mates plan) and not as much to call.
- Parents purchased the phone for them as a safety and convenience issue (they could then be contacted and picked up etc). This was considered especially important for rural respondents who commented that while the

- cell phone did not work at home in some cases, but when they went to town, Mum and Dad could contact them.
- It was important to have specific kinds of cell phones e.g. phones with picture taking and video ability, perhaps seen as a fashion statement?
- It was important to be able to contact their friends immediately and have frequent communication with them.
- Respondents very aware of the technical abilities of cell phones ‘techno savvy’. Talked about using Infra Red (Ir) to link cell phones together and exchange files.
- Respondents who could not use their cell phones at home expressed frustration that they could not make the most of \$10 Telecom texting, etc and that they felt like they were ‘missing out’ on what was going on with the rest of their friends. One respondent stated that she would travel all over her parent’s farm in order to find places from where she could text. Others talked about the need to travel to town more often to be able to see friends as their cell phones did not go.
- No use of land lines was made as it is too expensive to ring cell phones. Most respondents in rural areas had dial up at home so phone line could be often busy, which limited their ability to be able to ring.

### **Internet Usage**

- All respondents very ‘techno savvy’ and able to use the Internet.
- Bebo was the most popular social networking Internet website.
- Most had an internet blog on this website and others such as My Space.
- Used to communicate with others: online messaging, not so much email anymore. Communicate with people at school but also in other areas of NZ and the world, also family overseas.
- Other uses of internet: file sharing, video and music sharing and downloading e.g. Limewire, Kazaa, You Tube.
- Youth in rural areas talked about frustration of not being able to access Bebo from home in the weekends and at night. They felt ‘left out’ and had to find other ways to access internet. Most had dial up at home but a waste of time. Some used computers at school.
- Lots of usage at home for those who could access Internet with suitable access. Use it for homework, translating languages (Google), then communicating with friends constantly. Online messaging.
- Youth said they would spend all their time on it if their parents allowed it. Appears to be the most popular communication tool besides their cell phone.
- Phone cards are in part, the currency of pocket money.

### **3. Key Findings from Interview with 16 year old Female Teenager**

- Hardly ever use the [landline] telephone. “I’m always on-line with cellphone texting and Bebo” which are far more convenient (*instant communications with friends*)
- Make it cheap (*Price is an issue*)
- \$10 Texting [Telecom cellphone plan] is the best thing ever. “Best Mates [Vodafone plan] is awesome. (*Price is an issue*)
- “Ir [infrared pairing of cellphones] is the best thing on two legs as you can share pictures for free [from cellphone to cellphone]”. (*Price is an issue*)

- Bebo, MySpace and personal sites are important as “people like to share every bit of their life. It’s like putting up posters and photos in your bedroom, only much better. Who doesn’t like sharing their photos[of where they have been, what they have been doing with friends]”. (*The Internet is an extension of their lifestyle and who they are*).
- Cellphones are used to text, selected voice calling (when cheap enough), take photos, take video clips, get ski field reports, send pictures. The games don’t get used much. (*Cellphones are used almost as much as MP3 and JPEG memory sticks, cameras and digital diaries as they are for communications*)
- Having the ‘right’ sort of cellphone is important.

The following telecommunications services are used:

- Bebo and Myspace, which are social networking websites, are used for off line emailing, photo sharing, music sharing. (Bebo is the 85th most popular English-language website in the world and is the third most popular social networking website. Bebo also announced on March 17, 2007 that it was the most popular website in the Republic of Ireland. Bebo would appear to be the most widely used social networking website in Southland. )
- MSN website for instant, on-line social messaging and file sharing
- Texting via cellphone for anywhere, anytime messaging. To overcome what they see as iniquitous pricing plans, a number of kids have two cellphones, one each from Telecom and Vodafone.
- Email is only used for chain letters and to communicate with old people [parents].
- Limewire, a peer-to-peer file sharing client, which uses the Gnutella network (on the Internet) to locate and share music files.
- YouTube, for video sharing
- Search engines, mainly Google and Yahoo! to translate languages (using the Google translation tool) and as a general encyclopaedia for school homework.
- Occasional cellphone voice calling to selected people with which she has affordable calling plans.
- She seldom uses the landline telephone.
- She uses (monopolises) the family laptop and at any given time would be on-line with MSN, Bebo and texting.
- She uses all of the above to stay in touch with her classmates, school friends, relations and other friends in other cities around New Zealand.

#### **4. Summary of Findings**

- Teenagers expect to be able to communicate with each other instantaneously and regularly.
- Teenagers embrace new technologies eagerly and most have access to cell phones and broadband internet.
- Those that don’t have both Broadband Internet and home cellphone coverage are socially ostracised (e.g kids in rural areas with no cell phone coverage). Participation in social peer groups is defined by

telecommunications and ability to participate online. They are 'losers', those that can't.

- Costs are important.
  - Communication with parents is improved, or easier by use of cell phones e.g reporting on their whereabouts, parties, school results.
-