

# Faster broadband connectivity: the cost-benefit equation for small business in New Zealand

Information paper, 31 October 2014

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# 1. Overview

As Ultra Fast Broadband (UFB) fibre deployment continues in New Zealand, small businesses will be offered more options for Internet connectivity. Currently many small businesses have copper-based connections that use ADSL or the faster VDSL technology. Fibre-based connections offer a further step change in upload and download speeds. So is it worth upgrading from ADSL to the faster options?

Based on case study research the initial cost of upgrading from ADSL to VDSL is likely to be negligible while monthly charges will increase. For example, in 2013 our case study company paid around \$70 per month (\$840 annually) more for VDSL than it paid on average for ADSL in 2010. However we found that VDSL facilitates more productive time for the business. We estimate the increase in productivity resulting from a shift from ADSL to VDSL is 4.69% based on the average reduction in staff time required to upload and download files and information. For our case study firm over two working weeks per employee annually became productive time. So if productive staff time earns the business, say \$100 per hour, then the company benefits by approximately \$8000 per employee annually. Furthermore, staff numbers may also increase, bringing further gains. One case study firm increased staff numbers by 33% since the adoption of higher speed VDSL services. Clearly the benefit outweighs the cost by a significant margin.

It was also apparent that the benefits would be even greater and realised more rapidly with a further upgrade to fibre services. A move from VDSL to fibre delivered a ten-fold increase in upstream speed, further reducing our case study firm's unproductive time and contributing to increased average revenue per employee.

To upgrade to fibre, the cost depends on whether a completely new connection to the building is required. Our case study showed that where fibre is already available in the building the connection cost may be around \$650. Note however that it appears that there may be practical difficulties and higher costs in obtaining fibre connections when a business is located in a multi-tenanted building. Lack of immediate fibre availability and the potential time to install represented a major barrier to uptake for one of our case study firms.

In terms of ongoing cost switching to fibre from VDSL one case study company incurred an increase in monthly charges of around \$100 (or an additional \$1200 annually).

In addition to the productivity gains, the investment in faster connectivity is enabling the case study companies to tap into much larger markets for selling products and services, facilitating cost-efficient delivery of online services and content, and developing new revenue streams. While these benefits are difficult to quantify, the expected outcome is much stronger company growth than would have been feasible in the absence of a high-speed broadband connection. One of our case study companies is aiming for 33% growth in revenue, and its high speed fibre connectivity and increasing use of Internet applications is a key element of its growth strategy.

## 2. Dragonfly Science: using fibre broadband to extend professional service offerings

Case study, 31 October 2014

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### 2.1 Introducing the company

Dragonfly Science is a professional consultancy services company, providing specialist data analysis to central and local government in New Zealand. Located in a multi-tenanted building in the heart of Wellington City, Dragonfly Science was established in 2006 and now has a team of nine staff – six full-time and three part-time members.

With a special focus on statistical analysis and data analytics Dragonfly Science has undertaken projects to estimate and reduce the bycatch of protected species in fisheries, risk assessments and ecological modelling. The company also engages in software development and analyses data generated by high speed/volume data processing.

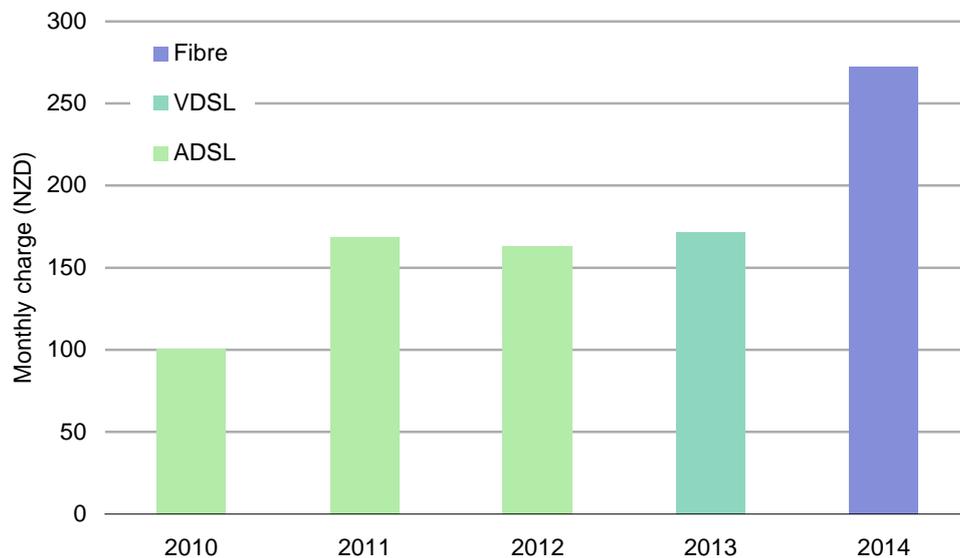
Network Strategies spoke to consultant Finlay Thompson about the benefits to the company of ICT services, in particular high speed fibre broadband.

### 2.2 Challenges

The company's primary goals include expanding the business through increased profitability, providing better customer service as well as improving the quality of its services. Dragonfly's growth strategy involves expanding into new sectors such as sustainability, and extending its customer base.

The speed of broadband services is key for Dragonfly's business. The company provides services involving the processing and generation of large and complex data sets which need to be uploaded and backed-up – the availability of better and faster broadband connectivity supports increased productivity at Dragonfly. The company uploads on average 20 to 30 GB per month.

For its broadband connectivity, in 2013 the company upgraded from ADSL to VDSL and in 2014 switched to fibre. While the first move was straightforward and had no major impact on the cost of Internet services, this was not the case when switching to fibre. Dragonfly Science found the move to fibre challenging – involving time (for connection) and significantly higher ongoing cost. Thanks to a neighbouring business already connected to fibre, Dragonfly Science gained fibre access without the need for a completely new connection to the building at the relatively modest installation cost of \$650 (all inclusive). In terms of ongoing cost switching to fibre led to an almost three-fold increase in comparison to ADSL in 2010 (Exhibit 1). There is a monthly data cap of 40GB for international traffic with no limit for national. The cap is rarely exceeded.



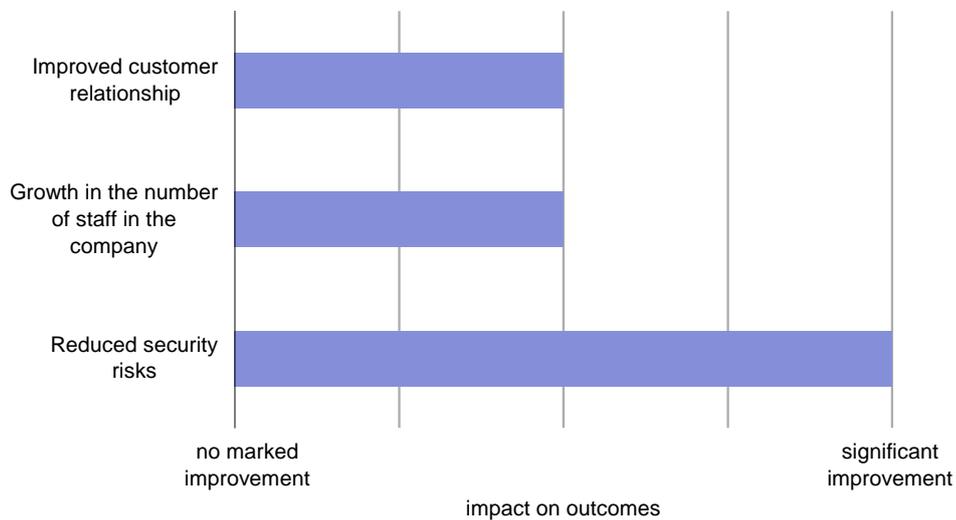
**Exhibit 1:** *Internet average monthly charges by year and technology [Source: Network Strategies]*

## 2.3 Solutions

While moving from ADSL to VDSL represented a significant increase in the download speed (from 6Mbit/s to 10Mbit/s), it was not until the installation of fibre that the company could finally address its main connectivity issue – poor upload speed. Switching to UFB symmetrical services meant a ten times increase in the upstream speed – from 1Mbit/s using VDSL to 10Mbit/s with fibre. As noted by Finlay the real issue was the upload – back-up of large sets of data resulted in a time consuming and challenging task due to the poor upload speed provided with DSL services.

## 2.4 Benefits of faster broadband

Thanks to the adoption of fibre the company has achieved significant improvements in reducing security risks through facilitating fast and efficient off-site backup, and also has increased the number of staff and improved customer relationships (Exhibit 2). Regarding the latter, Finlay stated that the improvements that fibre could bring are limited by whether the customers have fibre access at their end.



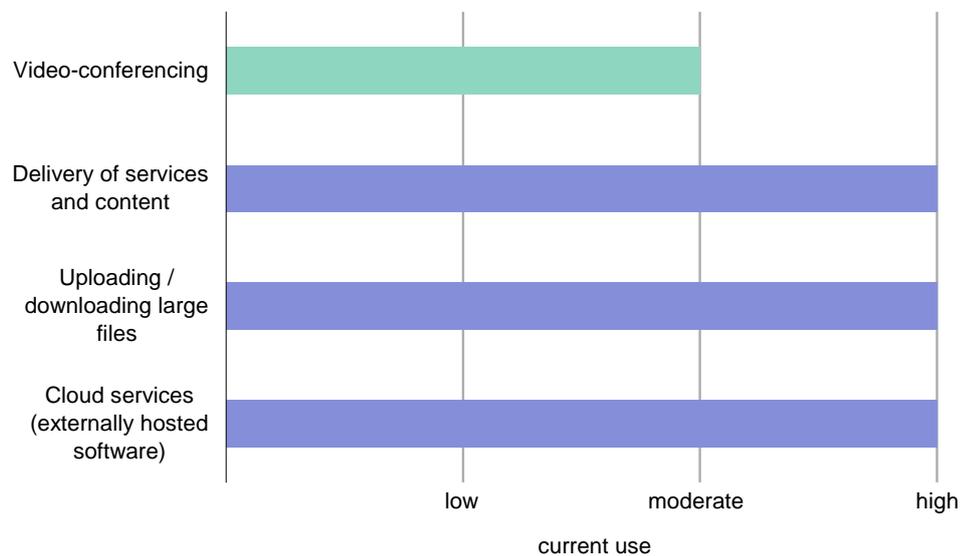
**Exhibit 2:** *Most important outcomes from fibre connectivity for Dragonfly's business [Source: Network Strategies]*

As a result of the availability of fibre Dragonfly has experienced significant improvements in its operational processes and marketing methods. Significant time savings have been achieved through the reduction in upload times. Finlay noted that the availability of faster Internet services allowed the company to manage data in a more flexible way.

## 2.5 Where to from here?

Dragonfly considers fibre a key factor for the success of company’s target of increasing revenue per staff member by around 33% and the use of fibre services is expected to contribute to this.

Dragonfly’s future use of ICT applications is expected to increase with the adoption of fibre. Over the next five years Dragonfly expects substantial further usage increases for cloud services and large file uploading / downloading activities. It is also anticipated that the use of video-conferencing and delivery of services and content will increase significantly. Currently Dragonfly is a high user of all of these applications except for videoconferencing (Exhibit 3).



Note: low – less than once a week, moderate – a few times a week but not daily, high – daily.

**Exhibit 3:** Dragonfly’s current use of selected ICT applications [Source: Network Strategies ]

With faster and better Internet services SaaS has become a common delivery model used for business applications. Cloud services are already heavily used by Dragonfly and the company expects to increase usage significantly more in the next few years.

The Internet is not currently used for online selling of Dragonfly's services although Dragonfly currently does advertise its services via the Internet. While search engine optimisation is at present the sole online marketing tool utilised for this purpose, the company does use its website and social media presence for marketing purposes. All of the company's purchases are made online and the company's IT systems are linked automatically with the Internet for re-ordering replacement supplies.

## **2.6 Key lessons**

For a small company an almost three-fold increase in the ongoing cost of broadband connectivity is a big step. For Dragonfly the benefits clearly outweigh the costs. Dragonfly's business model relies on uploading large volumes of data – the move from VDSL to fibre has delivered a ten-fold increase in upstream speed, reducing unproductive time and contributing to increased average revenue per employee. Looking to the future, there is considerable scope for Dragonfly's fibre services to drive further company growth through the cost-efficient delivery of online services and content, as well as extending online marketing capabilities to expand the customer base.

## 3. Wellington consultant engineers: fuelling productivity gains through broadband

Case study, 31 October 2014

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### 3.1 Introducing the company

We spoke to a small, specialist waste and water engineering consultancy company about its use of high-speed broadband. With four full-time and four part-time staff members the company is branching out into the technology sector by providing SaaS (Software as a Service). Originally based in the Wairarapa the company relocated to a suburb of Wellington early in 2014, and has one staff member based in Auckland.

The company undertakes compliance reporting for drinking water standards and has developed an online portal to provide access to this compliance information for clients. While engineering consultancy services are provided to local councils in New Zealand, the company also provides SaaS to clients in Australia, Singapore and the United Kingdom.

Network Strategies interviewed one of the staff members about benefits to the business from the use of ICT services supported by faster broadband connectivity.

### 3.2 Challenges

The company's primary goals include growing the business through increased revenues and profitability. To do this it plans to increase marketing and advertising activities to attract new customers. A key focus of these activities is increasing sales of online software applications.

The speed and availability of broadband services is vital for the business for a number of reasons:

- the company provides clients with bandwidth intensive big data utilisation tools and access to information online through its website
- with the shift to smart sensors in the water industry accessibility of these instruments through the company's LAN and Internet is becoming essential, reducing the need for site visits and providing real-time water quality monitoring
- with one staff member based remotely efficient upload and download of files is a key requirement
- the company's plans to grow the business rely on the Internet and involve the establishment of multiple websites.

While the company tried to install fibre broadband services after moving to its new premises, it was advised the process would take at least a month to complete. This was due to the actual installation process as well as the need to acquire permission from other businesses in the multi-tenant building.

### 3.3 Solutions

As the company could not afford to wait one month to connect to fibre services, it upgraded to VDSL services when it re-located (previously using ADSL for four years). Changing from ADSL to VDSL services has meant that the download and in particular upload speeds have improved, from 15Mbit/s downstream and 1.5Mbit/s upstream to 40Mbit/s downstream and 10Mbit/s upstream with VDSL. The supplier did not charge for the VDSL connection and the modem was also supplied free of charge. The monthly charge is approximately \$69 with a 200GB cap. Data usage over the cap costs \$1.50 per GB. As a comparison, had fibre been available the monthly charge would be approximately \$102 with the same data cap.

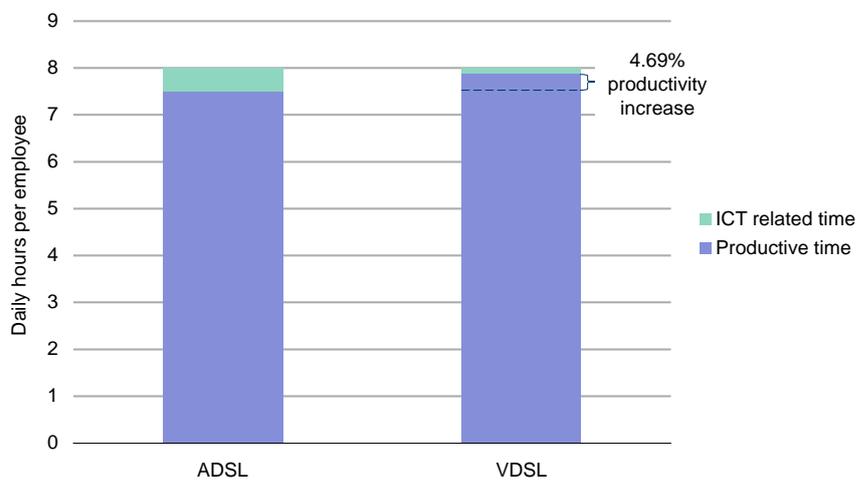
The interviewee noted that prior to using VDSL the waiting time for typical uploads was about 30 minutes, which was unproductive staff downtime. This service improvement has been very cost-effective as there has been little impact on the company's broadband costs since changing to VDSL.

The interviewee acknowledged that while significant efficiency improvements have been experienced by the company as a result of upgrading from ADSL to VDSL services, these benefits would still be greater had they been using fibre services.

### 3.4 Benefits of faster broadband

#### 3.4.1 Time and cost savings

Significant time savings have been experienced through the reduction in upload times as well as a result of a reduction in administrative overheads (Exhibit 1). The increased efficiency in completing work means that more time is available to take on new projects and clients. The staff member working remotely from Auckland no longer has to download files overnight to be able to work on them during the next work day but instead is able to work on files directly over the network. We estimate the increase in productivity resulting from the shift from ADSL to VDSL is 4.69% (Exhibit 1) based on the average reduction in staff time required to upload and download files and information.



Assumes an eight hour working day.

ICT related refers to time used for supporting activities such as downloading / uploading data.

**Exhibit 1:** Efficiency increase – breakdown of daily working hours per staff by technology  
 [Source: Network Strategies]

Similarly the use of the Internet has allowed the company significant cost savings through the ability to communicate with and commission the services of a Computer-Aided Design software (CAD) expert from India instead of locally.

#### *3.4.2 Hiring more staff dedicated to web services*

At this company the volume of work dictates when new staff will be hired. The interviewee noted that two staff have specifically been recruited for the purposes of managing the website for providing client access to information. This task would have represented a daunting prospect without the availability of faster Internet services.

#### *3.4.3 New goods, services and markets*

There has been a significant improvement in the opportunities to supply services which would not have been possible in the absence of faster Internet services. In addition the ability to market and sell its SaaS products online has meant that the company is able to access new offshore markets.

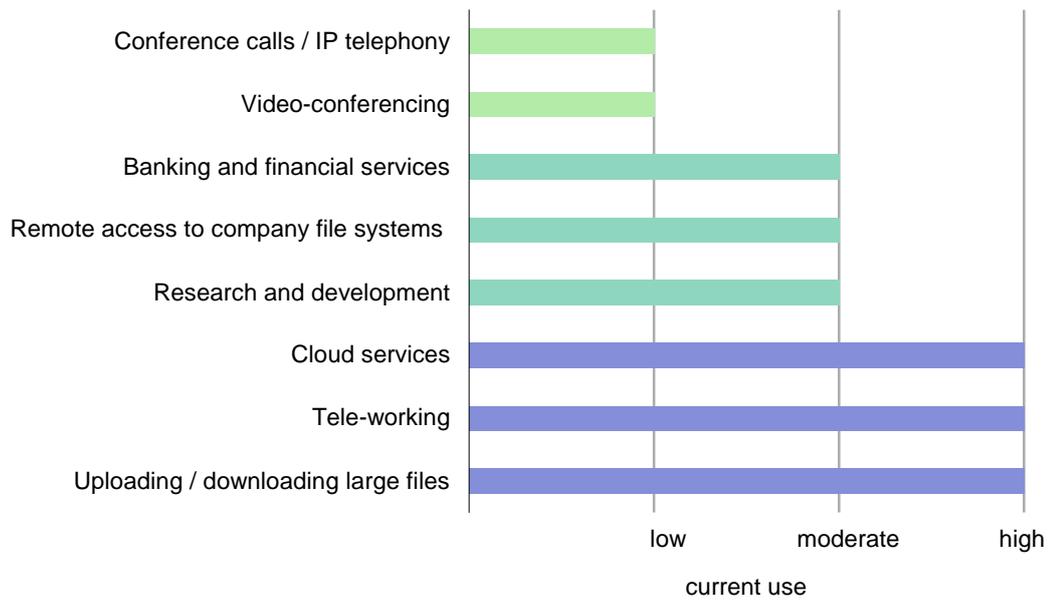
#### *3.4.4 More R&D*

Since the adoption of faster Internet services the company has also increased its research and development (R&D) activities and expects this trend to continue. In the past year the company has invested a significant amount (the equivalent of around 40% of revenue) in R&D of which 25% was spent on a software developer for providing client access to information online through its website.

### 3.5 Where to from here?

#### 3.5.1 ICT applications

We asked about current use of ICT applications and whether this use has increased since the adoption of faster Internet services (Exhibit 2).




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Note: low – less than once a week, moderate – a few times a week but not daily, high – daily.

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**Exhibit 2:** *The company's current use of key ICT applications [Source: Network Strategies]*

Over the next five years the company expects that uploading / downloading large files and research and development activities will increase significantly, while tele-working will also increase.

### 3.5.2 Aiming for growth via online presence

While the company relies on word-of-mouth to promote its engineering consultancy in New Zealand, the sales of its SaaS applications require an online presence. Currently the company uses the following tools for Internet marketing:

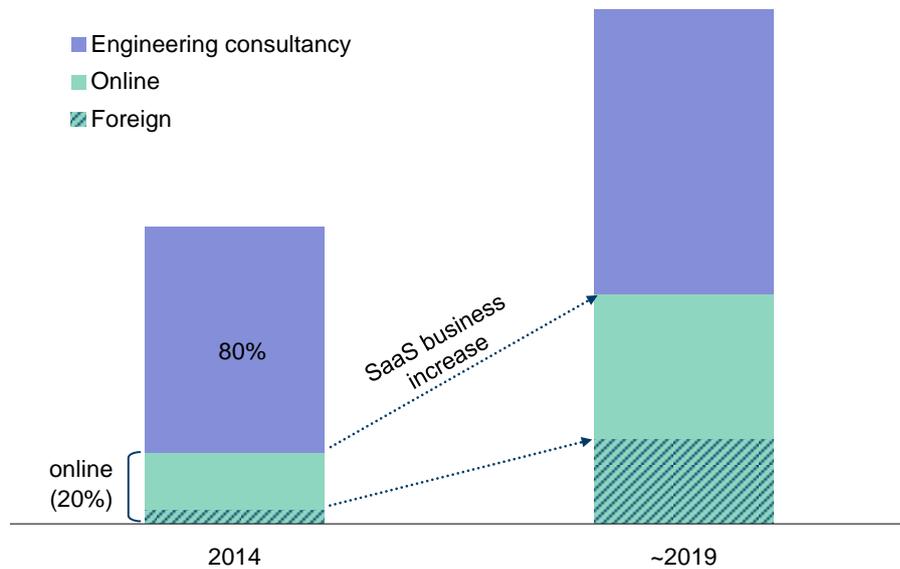
- search engine optimisation
- email marketing / e-newsletters
- online advertising
- search engine marketing.

The company intends to expand its website functionality by including a number of additional tools and applications. This will assist in the sales of software applications and online calculators (Exhibit 3).



**Exhibit 3:** *The company's website actual and planned future functionalities [Source: Network Strategies]*

Approximately 20% of the company's services and products are sold online (Exhibit 4 next page). About 5% of these online sales are to offshore customers, however this is expected to increase as the company continues to expand its SaaS business, extends its marketing activities and becomes fully web-based (expected within five years).



**Exhibit 4:** Current percentage of services sold online and future targets [Source: Network Strategies]

### 3.6 Key lessons

The company is enjoying productivity gains of almost 5% and staff numbers have increased by 33% since the adoption of higher speed VDSL services, but it is apparent that these benefits would be even greater and realised much faster with a further upgrade to fibre services. Unfortunately the wait time for fibre connection is a barrier to uptake, as well as the need to obtain permissions from other businesses in the building.

The Internet is a key growth enabler, allowing the company to tap into a much larger market, for selling its products and services and even for developing new revenue streams.

While the company is an early adopter already operating in the technology area, the productivity benefits realised by this company through higher-speed broadband are readily transferrable to any business operating in different sectors, even those that are not particularly 'tech savvy'.