South East Premium Wheat Growers' Association
PO Box 365
ESPERANCE WA 6450

Anthony Overs
Inquiry Secretary
House of Representatives Standing Committee on Agriculture and Industry
PO Box 6021, Parliament House, Canberra ACT 2600

Dear Anthony,
Thank you for the opportunity to make a submission to the Standing Committee on Agriculture and Industry.

The South East Premium Wheat Growers Association (SEPWA) represents more than 270 farming organisations in the south east region of Western Australia. In our region more than 2.08 million tonnes of grain was grown in the 2014/2015 season with an export value of more than $650 million.

Agriculture plays a key role in local economies and export revenue, however in rural WA many farming businesses are not able to access basic technology due to inadequate data connection services. SEPWA has in particular been witness to this as we deliver precision agriculture training to grain growers across the whole of WA region.

Connection to the Telstra mobile network for data services is now the most common means for WA regional people to connect to the internet. Users of the mobile phone network for data connection often complain about reliability as towers are prone to overload with more and more data use by regional people.

Mobile broad band speed is usually superior to satellite services as long as the network is not overloaded. As a means to limit the data overload on towers, Telstra limits peoples' monthly data allowances. These data charges have been found to be around 14 times more expensive per GB than the town based internet service prices of ADSL. That's an urban ADSL price of around $0.45 per GB while on farm users pay around $6.40 per GB via mobile broadband.

Satellite is the stated NBN solution for many grain growers in WA. Current NBN interim services are noted for their incredibly slow speed however the scheduled launch of 2 more NBN satellites should change this. It should be noted however, changes in user behaviour with improved service, combined with growing demand for regional data (health, education, e-government, etc) will lead to a compounding demand situation for the NBN satellites. With no ability to upgrade post launch we

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may be faced with a similar overload situation to the interim satellite within 5 years for the new NBN satellites.

WA grain farmers have a high dependency on mechanisation for productivity efficiency, all of which now requires data connected support. In this respect the poor data connection status is already having a significant economic impact on productivity. As machinery technology becomes more reliant upon internet access the adoption rate is constrained by on-farm internet access.

Running a farm office with limited data packages and slow speeds means tasks which may take 20 minutes in an urban connection environment can take up to 4 hours from the farm. Online banking; being unable to perform conference calls; and limited access to new office applications; are areas where farmers feel disadvantaged.

Access to education at all levels is also dependent on data connection. In our quest to provide skilled people for the future of our rural businesses, it is critical that education can be accessed in regional and remote areas. Many farming families feel their children are highly disadvantaged for basic homework completion as their internet connection is unreliable and they are unable to complete tasks within monthly data limits.

To compound the data connection problem faced in rural areas, government is now moving to interact electronically. Taxation and superannuation are two mandatory sectors requiring electronic interaction. Under current connection speeds any e-government cost saving will be quickly lost via miscommunication and improper lodgement.

I hope this information is of some use in guidance of agricultural innovation.

Yours sincerely,

Nigel Metz
Projects Officer
South East Premium Wheat Growers Association

Regional data connection survey
Conducted by SEPWA
South East Region - 2015

Findings from a survey of farmers in the Esperance Port Zone current internet data connection status March 2015

Prepared by Alice Butler and Nigel Metz – South East Premium Wheat Growers Association (SEPWA)

Contents

Executive Summary of findings.

"*Relying on old technology is hindering the ability for our business to take full advantage of electronic management systems."* Veronica Bertola – Beaumont- north east of Esperance.

The survey clearly defined mobile broadband via the Telstra phone network as being the main method of on farm internet connection. Around 60% of respondents in the Esperance region are connected by this means. While this connection method has been rapidly adopted by rural people there is an overall low level of satisfaction to this situation. This is perhaps exaggerated by users being able to compare an 'in town' connection speeds versus an 'on farm' via their mobile devices.

While satellite connection services the remaining 40% of on farm internet connection, it's noted as being slower than connection via the Telstra mobile phone network, yet more reliable.

Overall the theme of slow speeds, limited data allowances at comparatively more expensive rates dominated respondent's feedback. Eighty Eight point five percent of survey respondents felt disadvantaged by their current internet connection situation and cited impacts on their farm businesses in areas of safety, technology adoption, education and farm office management.

Comparison of the on farm internet services via the Telstra mobile network were found to be around 14 times more expensive per GB than the town based internet service prices of ADSL. That's an urban ADSL price of around $0.45 per GB while on farm users pay around $6.40 per GB.

Background

The Esperance Port Zone (EPZ) delivered 2.08 million tonnes in the 2014/2015 harvest with an export value of more than $650 million. Agriculture is one of the leading industries within the port zone and provides the backbone to regional economic activity such as sales dealerships and agronomy services. Although farming enterprises play a key role in local economies and state exports, their sparse rural location has hindered them in terms of internet access.

Technology development in all sectors continues to create more cloud based data connection dependent technology. While much of this technology has revolutionised day to day life, this is becoming restricted to areas where internet access is reliable, fast and affordable. In rural Western Australia this is often not the case and farming businesses are not able to access this technology due to inadequate data connection services.

Currently, the majority of WA grain farmers can choose either between satellite or the Telstra mobile phone network to connect to the internet. These are expensive options which impede on the ability for WA grain growers to stay competitive in global grain markets. Due to this, SEPWA developed the "*Regional data connection survey*" to capture direct experiences of EPZ farmers to better understand the current internet situation and how it affects local farming businesses.

Survey results

Demographic of Participants

In March, 2015, 55 members of the Esperance Port Zone were surveyed, either through a phone survey or online questionnaire. Participants were firstly asked a series of demographic questions including their age bracket. The data showed that participants' ages ranged from 20 to 60, and the average age bracket was 40. Figure 1, displays the distribution of ages was centred on the 40 age bracket.

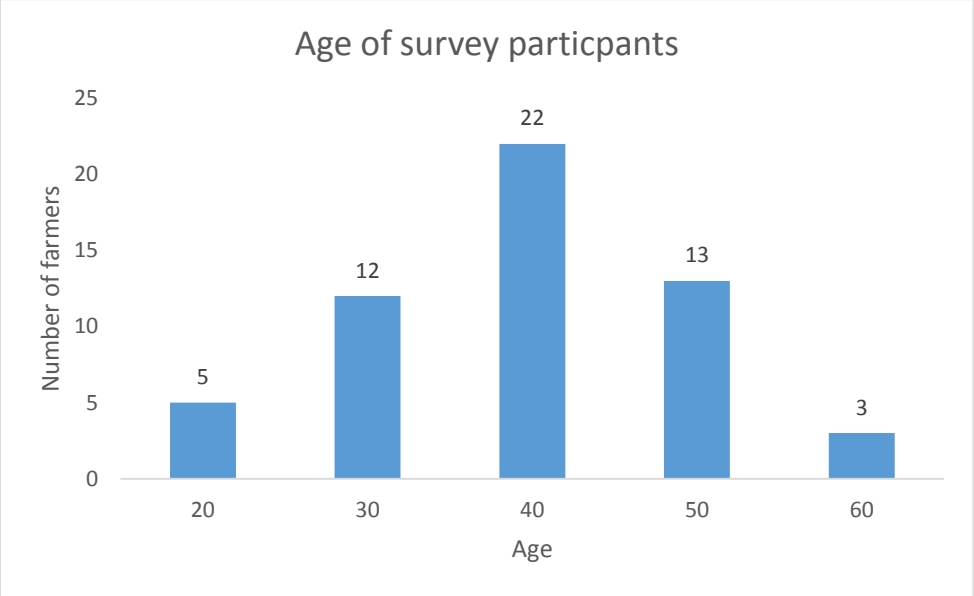

Figure 1. Age of survey participants.

Figure 2. below, displays the distribution of participants across the port zone, showing that of the 55 participants surveyed, 23 different home locations were reached, capturing a wide spread of data across the whole region.

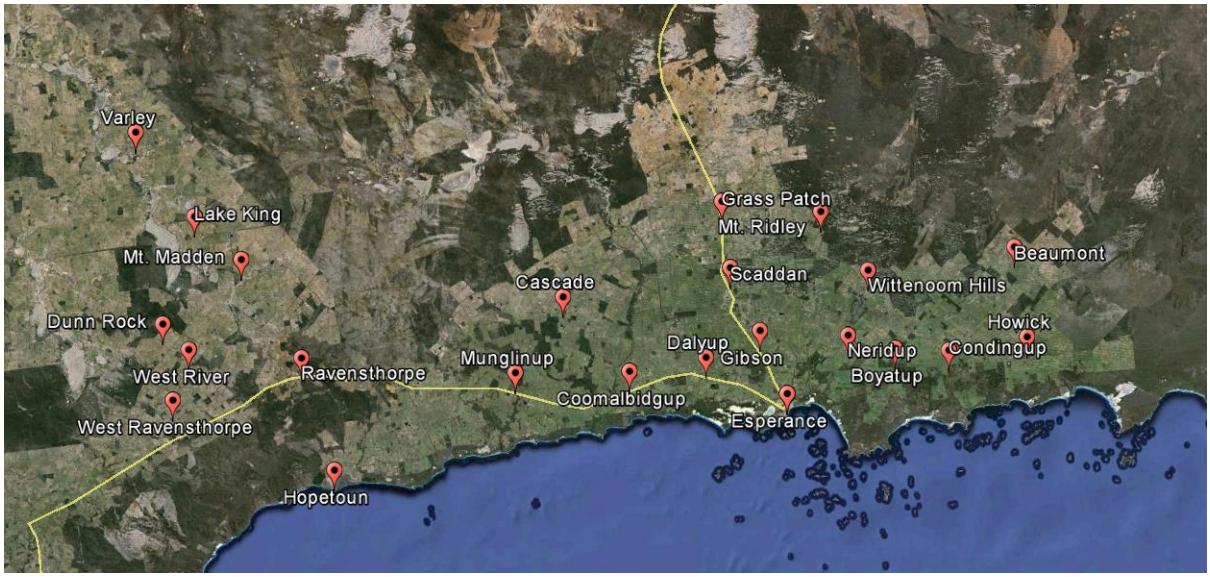

Figure 2. Home locations of the Rural Wi-Fi Survey participants.

Current internet connection

The options for current internet connection were ADSL, Dial Up, Mobile Network and Satellite. Current internet connect, in figure 3., shows that 59% of participants connect using the Telstra mobile phone network, 34% use satellite, 7% use ADSL and 0% used dial up. All 7% of the ADSL users were located within Esperance town site where ADSL was available.

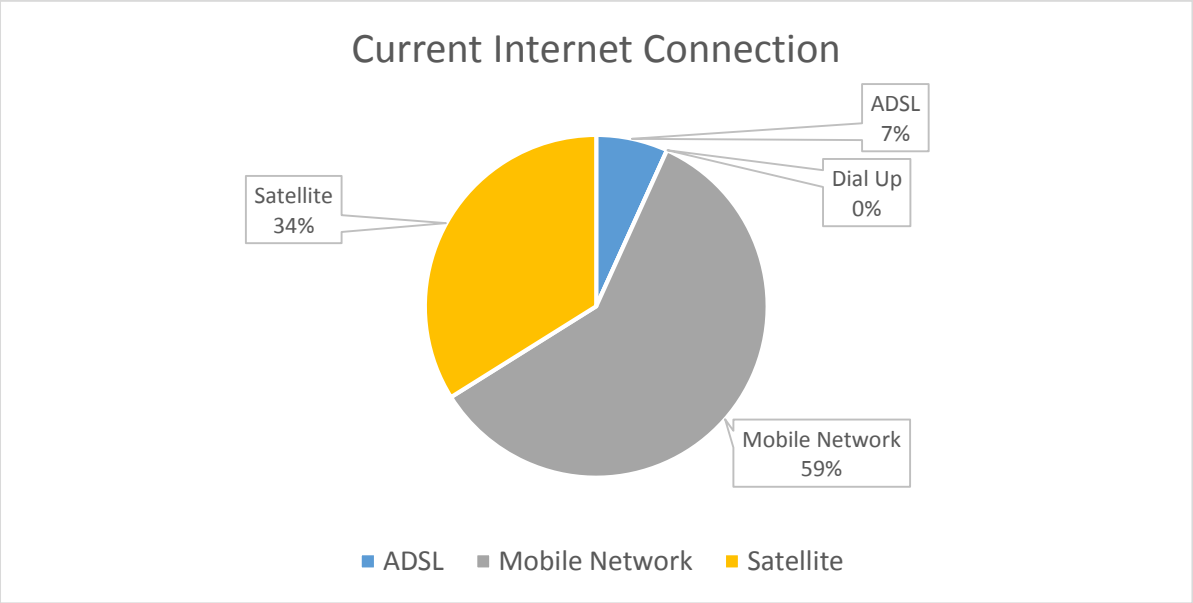

Figure 3. Surveyed participants current method of internet connect (%).

There were nine different providers who made up the 34% of participants who connected via satellite, illustrated below in Figure 4.

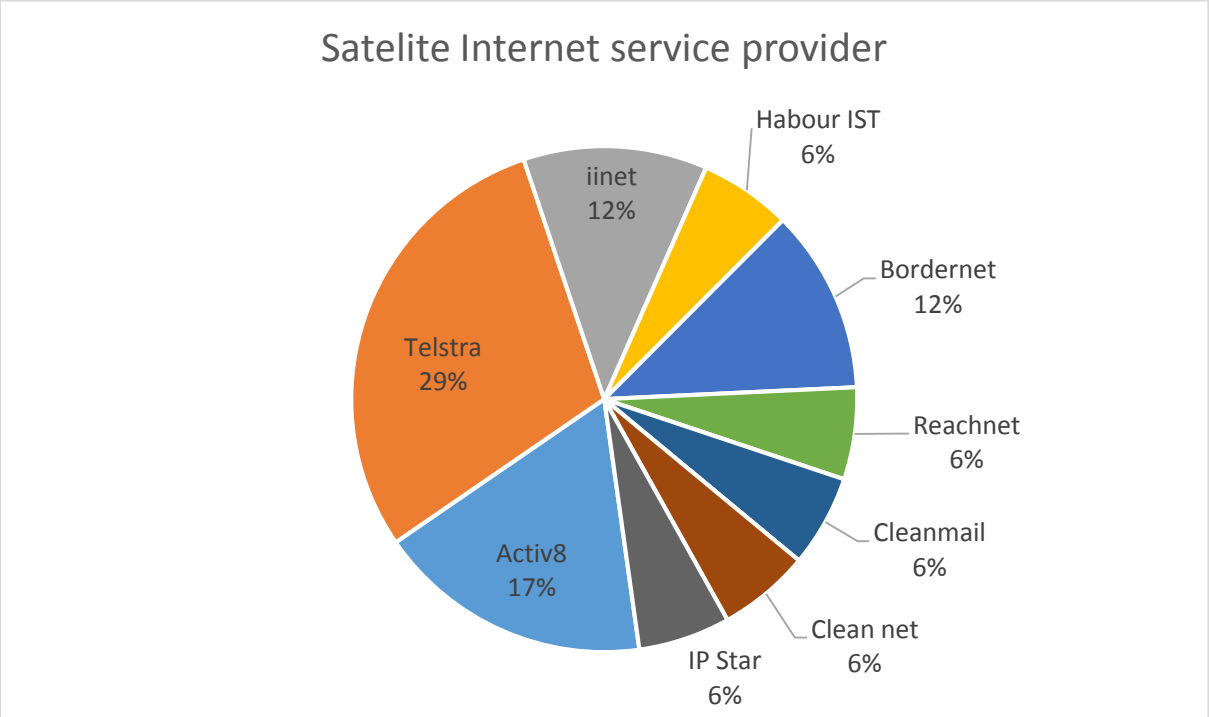

Figure 4. Participants' current satellite providers.

The majority, (59% of participants) are currently connecting to the internet using the mobile phone network which is solely provided by Telstra in regional areas. The Telstra mobile phone network is equivalent to using mobile phone data and is reliant on the wireless transmission towers to provide signal to users in the form of mobile broadband.

Figure 5, displays the Telstra coverage map for the 3G and 4G network within the EPZ. Telstra generally has reception on the major roads, however a significant portion of farm land requires 3G external antennas or are in blackspots.

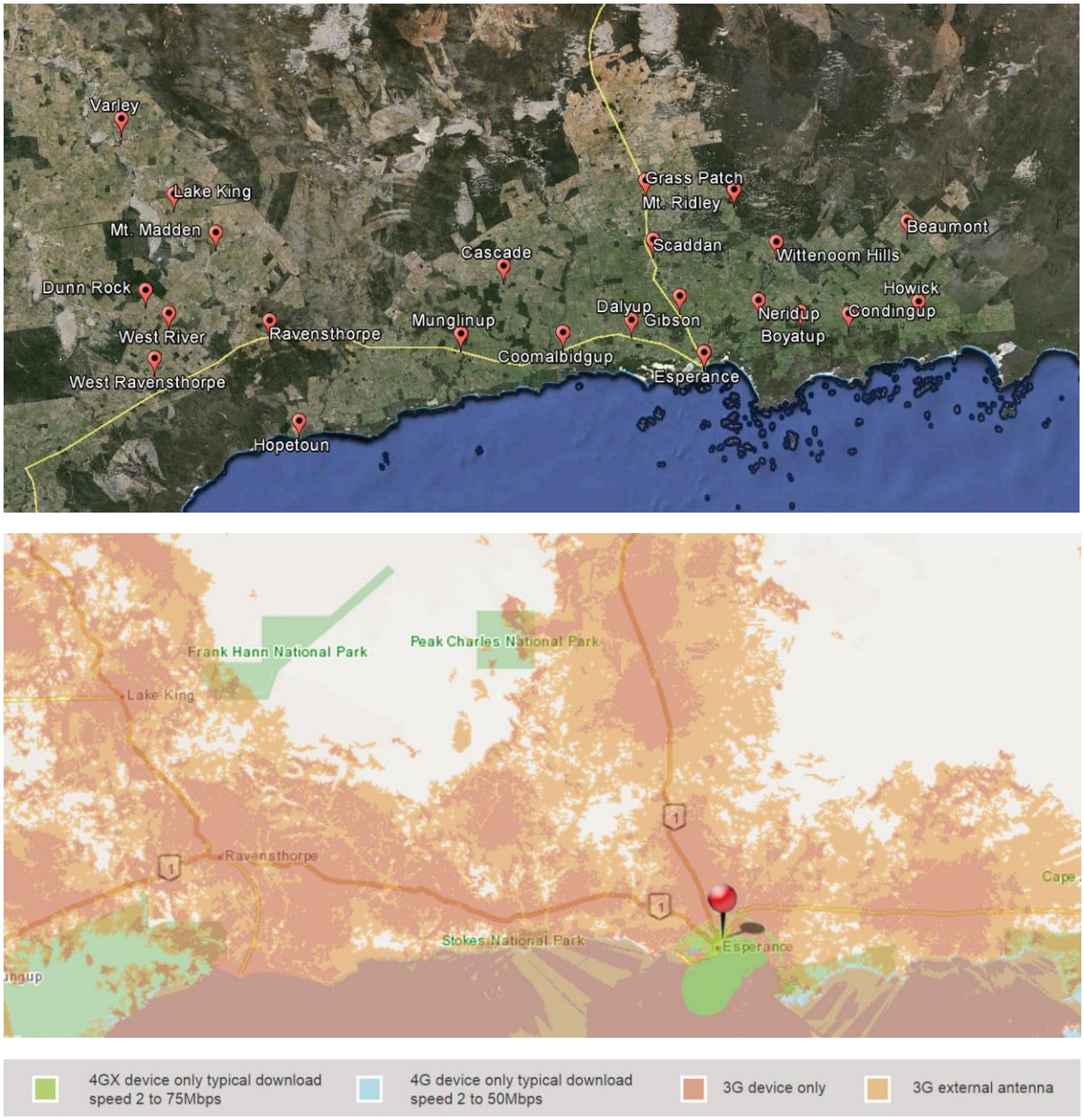

Figure 5. Telstra coverage map for the Esperance Port Zone compared with the participant location map.

Satisfaction with connection, reliability and service of current internet

Participants were asked to rate from 1 (low) to 10 (high) the following aspects of their current internet provider: connection, reliability and service.

Since all participants who put their internet connection as ADSL were located within the town of Esperance and are not rural users, these responses have been removed from the overall data set.

From Figure 6 below, the mobile network had an average connection speed rating of 4.44 out of 10, while the satellite was rated lower at 3.85 out of 10. Satellite was rated the more reliable network at 5.15 compared to the mobile networks rating of 4.63. The satellite service criteria was rated higher than the mobile network with 4.8 compared to 4.49. Apart from satellite reliability, all other areas were rated less than a 5 out of 10 indicating that participants across all regions were not satisfied with their current internet situation.

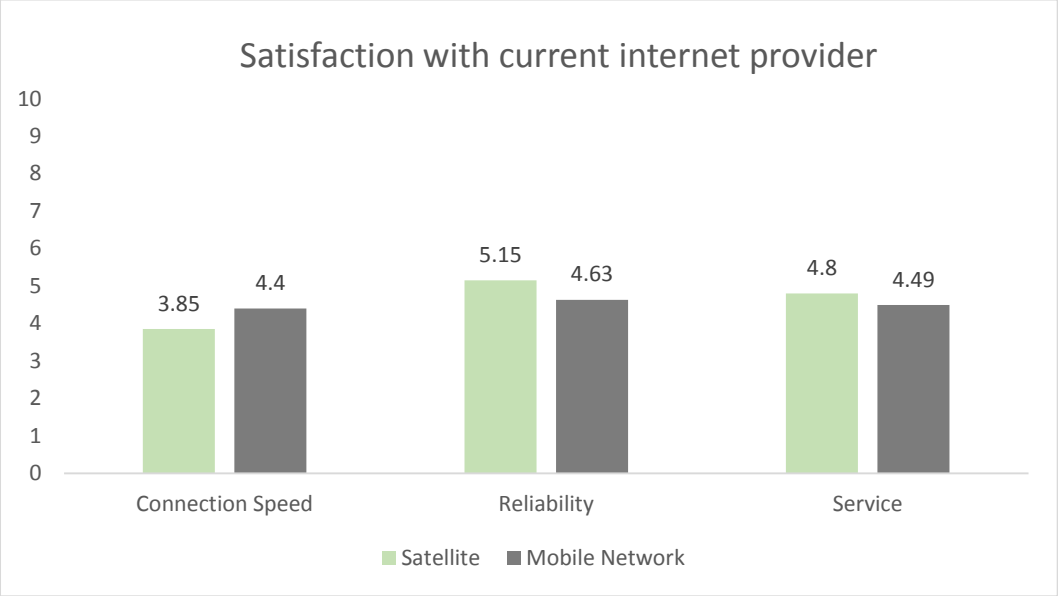

Figure 6. Average satisfaction with current internet provider rated from 1 (low) to 10 (high).

As a part of the regional analysis of data we have segregated the black spot areas on the Telstra coverage map, such as Wittenoom Hills, Neridup and Boyatup. Using this data subset, much lower ratings emerge, this can be seen in figure 7. While the use of fixed point 3G external antennas provide some relief, there was still noted to be insufficient coverage in the Boyatup, Neridup and Wittenoom Hills areas, thus explaining the average satisfaction ratings of 2.75, 2.5 and 3 out of 10 for connection speed, reliability and service, respectively.

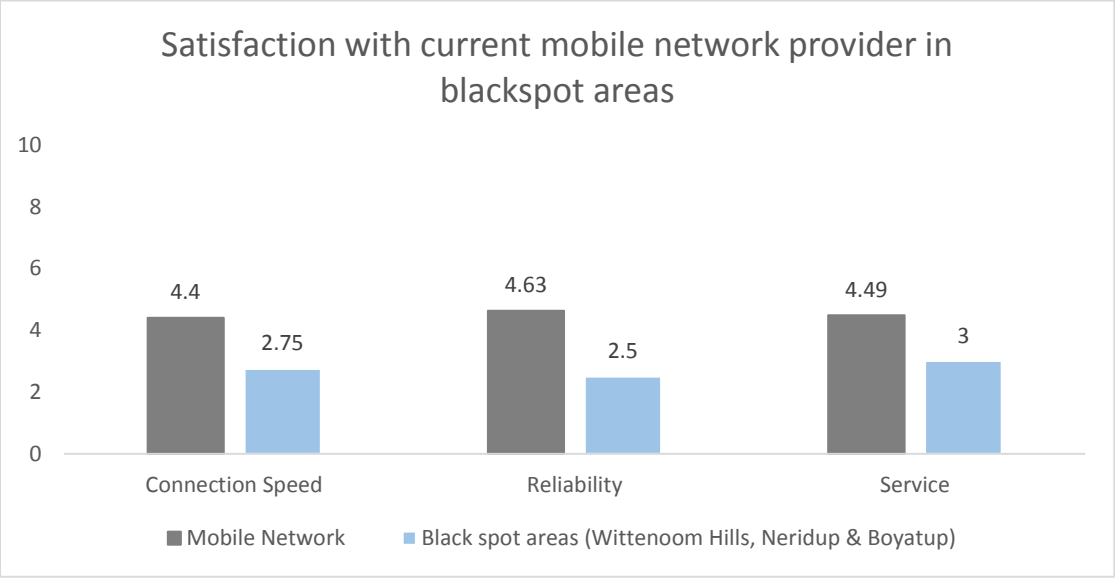

Figure 7. Average satisfaction with current mobile network provider in black spot areas against EPZ.

Participants were asked to comment on the satisfaction ratings they gave. This produced a large body of text providing specific insight into each of the participant's personal internet connection. To analyse this body of data as a whole a wordle has been created, figure 8.

A wordle is a graphic representation of a body of text, where words used more frequently are displayed in a bigger font size. This allows you to depict the key words which were common to a large portion of participants.

Figure 8. Satisfaction comments from the survey expressed as a wordle.

Speed, data, mobile, expensive, Telstra, service, internet, download and **need** were the most mentioned words submitted in the participant's comments. So to bring satisfaction ratings above 5, improvements within those areas are required.

Farmers disadvantaged by their current internet connection

When asked to comment on whether the current internet situation made participants feel disadvantaged 88.5% of those who commented said yes. The key words collected in the survey have been displayed by the wordle in figure 9.

Figure 9. Disadvantaged comments from the survey expressed as a wordle.

Machinery, speed, service, data and **farm** were some of the most repeated words when participants' were asked to comment on whether they felt disadvantaged. Machinery being highlighted here shows that there is a real need for machinery to be able to connect to the internet for service and use efficiency. Given WA grain farmers' high dependency on mechanisation for productivity efficiency this would be having significant economic impacts on day to day business performance of WA grain farmers.

When comments were analysed as a whole, the main reasons for feeling disadvantaged were: safety, limited access to new technology, value for money, effects education and restricted farm office management. These are further detailed in the following paragraphs.

Safety is a priority of all businesses, and farming is not an exception. Participants commented that the poor mobile network coverage made managing OH&S across the farm very difficult; dangerous for kids coming to and from the school bus; and unreliable during seeding and harvest (the busiest and most dangerous time of the year for farmers). One farmer noted that two very serious vehicle accidents happened in the last 12 months and victims couldn't call for help, waiting for over an hour for help to drive by. It could be argued that phone reception is a separate issue to internet connection, however if we are relying on the mobile network for internet connection and phone reception it makes the situation interlinked and therefore a negative for both circumstances.

Limited access to new technology was repeatedly listed as a reason why farmers felt disadvantaged with their current internet situation. The Esperance Port Zone is renowned for its innovative farmers and leading in industry adoption within Western Australia. The United States and Europe continue to develop new technology and WA farmers are keen to use it. As machinery technology becomes more reliant upon internet access the adoption rate is constrained by on farm internet access.

As all industries in Australia rely on high levels of mechanisation to maintain profitability margins, the current data access issues highlighted would be having a significant profitability impact in amongst the farming community.

Education at all levels, school and university, is becoming more reliant on the internet to access documents, submit reports, research information, watch lectures, and complete basic homework. Participants felt their children were highly disadvantaged for basic homework completion as their internet connection was unreliable and unable to be completed within monthly data limits. As a result the education studies are constrained by concern about being connected to the internet and staying within monthly data limits rather than focused on completing the learning task.

Farm office management is a crucial part of running a successful farming enterprise, and being connected to the internet is an integral part of this. Online banking, being unable to perform conference calls and limited access to new office applications are areas where farmers felt disadvantaged. A farmer stated: “Relying on old technology is hindering the ability for our business to take full advantage of electronic management systems.” This expresses the shortcoming the farmer feels when comparing his business to those that are utilising current technology.

Price differences for rural internet access

The results of this survey have found the rural internet access, on top of being intermittent, and unreliable was found to be considerably more expensive than options available in the Esperance town area. The Esperance Farm Office Management (EFOM) group recently had a meeting where they discussed internet plans currently taken up by local farming businesses.

It was noted that there was great discrepancy between packages and deals offered to the businesses. Access to 25GB was costing one farmer $160, another farmer $150 and a third farmer $89.95 for the same service. Lower data usages were also noted as being considerably expensive; $65 was being paid for 8GB and $105 for 15GB.

In urban centres, Telstra Broadband packages are costing users approximately $90 for 200GB. With this comparison urban data services are around $0.45 per GB while regional users on farm pay up to $6.40 per GB. That is premium of more than 14 times the urban data cost which comes at higher speed and reliability than regional services via the mobile phone network.

There were also inconsistencies in satellite prices and packages. Although these were not as widely varied as the mobile broadband options and this is more than likely due to there being nine different service providers being recorded by the survey. These survey results indicate there is healthy competition for the satellite service provisions which is considerably different to the mobile phone network which is only Telstra in regional WA.

Where does this leave the agricultural industry

The current circumstance of poor internet connection does not leave the agricultural industry in a favourable position. Technologies such as precision agriculture offer WA grain farmer's significant efficiency gains going forward. David Lamb, a professor at the University of New England stated at the opening of UNE's SMART farm Kirby "If we walk over that ridgeline over there, there's no mobile coverage. So how the hell am I going to deploy a sensor over there? But that might be land that produces high returns from precision management." Internet access is a road block stopping the Australian agricultural industry moving forward and harnessing technology.

To compound the data connection problem faced in rural areas, government is now moving to interact electronically via websites and e-forms as a cost saving measure in service delivery. Taxation and superannuation are two mandatory sectors requiring businesses to electronically interact with government, however many farm businesses take multiple hours to complete tasks which take less than 10 minutes with good data connection speed. If rural data connection services are not improved any e-government cost saving will be quickly lost via in-business productivity and rural area disadvantage.

Regional data access:
Connection to our economic future.

Preliminary briefing document:

Prepared by Nigel Metz – South East Premium Wheat Growers Association (SEPWA)

Contents

Background

Our dependency on technology is now deeply embedded in our daily lives. Grain farming in Western Australia is no exception. Data use rates and volume is increasing rapidly from both the farm office and field machinery. The current data connection options available for WA grain farmers and rural businesses are limited and expensive. As technology systems and applications evolve, there is the presumption of data access by the system designers and metropolitan based businesses and government departments.

Internet data connection is a pivotal infrastructure service which will determine regional agribusinesses ability to remain competitive in in the international export market place. Without it, our regional communities risk being marginalised and unable to participate economically and socially in the modern world.

Project Aim:

To investigate alternative internet data connections for businesses in rural WA as a means to ensure the economic and social sustainability of WA grain growers for the future.

Why SEWPA is heading this concept?

SEPWA has been appointed by the Grains Research and Development Corporation (GRDC) to deploy technology and precision agriculture training to WA grain growers. Since early 2014, SEPWA has trained more than 330 farmers and industry professionals from Geraldton to Albany and east to Merredin. In this interaction, at more than 36 venues across the state, there has been a continual theme that farm business technology adoption is choked by the current level of internet data connection.

In the Esperance region, this is also the case. Through the SEPWA network, local sub groups such as the Esperance Farm Office Management group (EFOM) have voiced the restrictions of current internet connections on the farm business. (Please see the *farmer testimonial* section of this document). This is also supported by numerous local sub groups lobbying for improved mobile phone coverage within the Esperance region.

In response to this obvious on going need, SEPWA was funded by the Council of Grain Growers WA (COGGO) to investigate means by which on farm internet data connection might be improved.

Regional data situation (*Farmer Testimonial – 50km north of Esperance)*

We run a large farming enterprise based on broad acre grains. We employ approximately 8 permanents and up to 8 casuals at any one time. I have 2 NBN satellite connections at 2 of the farms and we run a server at the main farm which supplies a wireless connection from the satellite signal. Our current problems are as follows:

- *Having a large amount of casual staff using our data allowance means we need at least 30 gig of data peak to cope with the demand. They cannot use Telstra wireless as it is very unreliable and site specific (won't work indoors at all). Without providing an internet connection we would not be able to hold staff as it is their only connection with their families and friends*
- *There is no possibility of downloading movies*
- *There is no possibility of watching U tube clips due to the very slow speed*
- *On ringing my provider the answer is always that the Satellite is full and there is nothing they can do*
- *On enquiring about putting up a large aerial to receive wireless I was informed that 15gig was the maximum data I could have which is not enough*
- *The ATO wants us to do all our BAS's online. This is untenable due to the slowness of getting into the portal*
- *I have tried to sponsor employees through the immigration department's portal and it always takes multiple goes to get into the portal and that is VERY, VERY frustrating. If I want to ring the immigration department it is a 2 hour hold and they direct me to go online*
- *I would spend half my internet time in waiting for the screens to come up, so consequently I have 3 – 4 jobs on the go at any one time so as to try not to waste time*
- *The ATO wants us to pay all our superannuation payments online. This will be very time consuming.*
- *I have no mobile signal in the house. Everyone expects us to have a mobile and consequently I missed the death of my father because I didn't get the message for 2 days*
- *When I engage my computer repairer to fix a problem I am charged double the time because it takes them so long to negotiate my computer online. They can't believe how I put up with such a slow internet.*
- *My data has been reduced from 60 gig unlimited to 30 gig peak and 30 non-peak with little reduction in my monthly fee. They are talking about further restrictions.*

In conclusion we just tend to put up with what we have because that is the way it is but if anyone from the city had to put up with our internet speed then something would be done very quickly.

Current data connection options for regional Western Australians

ADSL

The basic ADSL is the main stay of WA internet connections in towns and metropolitan areas. It is the most economical option with multiple service providers making for a competitive market place in terms of data allowances and price. ADSL2+ is the highest speed option with this generally only available for users within 2 km of the telephone exchange. Standard ADSL can reach out to about 5km from the exchange. With these distances pretty much 100% of farm businesses in WA do not have access to ADSL internet services.

Mobile broadband – Telstra mobile phone network

Connection to the Telstra mobile network for data services is now the most common means for WA regional people to connect to the internet. This is reliant on mobile phone signal which is often boosted by farms installing booster antenna and WiFi repeater units around the house and sheds. Users of the mobile phone network for data connection often complain about reliability as towers are prone to overload with more and more data use for regional people. Speed is usually superior to satellite services as long as the network is not overloaded. As a means to limit the data overload on towers Telstra limits peoples' monthly data package rates to users with reasonably high cost rates. The result being the majority of farm businesses are now using mobile broadband with little other choice than Telstra as there is no other service provider in regional areas.

Satellite

Satellite is the only choice for remote rural areas. Many people are already connected to NBN satellite. While it is noted as being more reliable that the mobile phone network data services it is slow, limited for data download and costly. For some users, they noted better connection speeds earlier in their use, however as more subscribers have been connected, performance has dropped considerably. Data connection speeds are set to improve by the scheduled launch of 2 more NBN satellites in the near future. It should be noted however the growing demand for regional data use in all areas (health, education, e-government, etc) will lead to a similar overload situation in 2 to 3 years post launch.

Alternative data network provision (Ocean Broadband- Case Study)

Ocean Broadband -member of the Telecommunications Industry Ombudsman (TIO) scheme - licensed carrier #165

Ocean Broadband Ltd is a Western Australian company formed in 2004 focused on providing wireless broadband internet services to communities that are currently unable to access broadband via ADSL. The network spans more than 80,000 km2 of the Perth Metro area and of regional Western Australia combined making Ocean Broadband one of the largest dedicated fixed wireless broadband providers in Western Australia. Ocean Broadband delivers services to both residential and corporate customers, with a particular focus on improving broadband availability and speeds within Western Australia.

(Source: http://www.oceanbroadband.net.au/)

In the case of Ocean broadband they are using fixed wireless delivery of a wholesale aggregated ADSL ports from an OF serviced exchange. While the fixed wireless connection is low cost and effective there has been some issues in overloading the ADSL ports at the exchange. Essentially the ADSL connection is not designed to support the volume of demand aggregated together from a wireless network of users. In this case, backhaul connection needs to be greater than ADSL ports ideally direct to OF. Although NBN will provide alternative OF backhaul for regional centres in the future, this will not be available to businesses outside town boundaries.

Regional Telecommunications Cooperatives – a possible option going forward.

The Ocean broadband model is cost effective and could be deployed in regional areas via co-investment from users, for example via a cooperative model. As a means enabling regional people to participate in their telecommunications future, a cost sharing arrangement between government and the cooperative could enable the OF access for regional users. The concept considers local users being partly responsible for infrastructure funding and erecting as well as ongoing maintenance. This would provide considerable leverage against public funds which are under ongoing budgetary pressure.

Other examples of data networks

Community Wireless Networking in Western Australia http://www.wafreenet.org/

The West Australian Wireless Freenet is a community group that aims to form a state-wide, free wireless computer network utilising the public frequency bands in the 5Ghz spectrum. There exists a number of small wireless networks in WA where users connect to central access points and enjoy the benefits of a network. Our primary goal is to encourage people to join into the WaFreeNet to link together as many of these existing wireless networks as we can, and secondly, to assist networking-enthusiasts at large in joining our backbone.

Although not directly connected to the Internet, the WaFreeNet (as it's known to its users) is similar to it in that facilitates typical Internet activities such as telecommunications (text, voice and video), data-transferring and back-up, and multi-player gaming. The WaFreeNet is, by all definitions, a 'network of networks,' exactly like the Internet although much smaller. Just like the Internet, their network traffic is managed and routed by nodes and peering points, and servers and services are provided by members (usually run on hobby machines at home).

The group is entirely volunteer run; and though esoteric in nature, they encourage and facilitate the learning of key concepts and skills necessary to running safe, legal, secure and efficient computer networks. Users donate time, radios, money and computer hardware and all share the goal of making the West Australian Wireless Freenet the best Wireless Freenet in the world.

Peoples Rural Telephone Cooperative http://www.prtcnet.org/index.html

The Rural Broadband Association (USA) http://www.ntca.org/

Data backhaul….the hidden monopoly in regional telecommunications.

In this document we have made mention of the fact that there is only a single mobile broadband service provider for data services in regional WA. The result of this is that mobile phone network data charges are expensive and data allowances are not sufficient for day to day commerce. When considering why alternative wireless mobile broadband companies have not deployed in regional WA we need to understand the aggregated data backhaul situation.

The current regional optic fibre (OF) network is primarily owned by Telstra which hosts data backhaul from regional locations. In terms of national telecommunications infrastructure, there are alternative services providers which offer alternative OF links between capital cities and major population centres. On these major routes of OF, there are multiple service providers which provide competitive pressure on price and data allowances at a wholesale level.

For example consider the following which is quoted figures from a telecommunications service provider based in Albany:

To purchase wholesale data access in Albany (using Telstra backhaul OF):

- **30 Mbit** per month - Symmetric upload and download speed (commercial link)
- **$9,000** per month

To purchase wholesale data access in Katanning at an alternate service providers OF:

- **100 Mbit** per month - Symmetric upload and download speed (commercial link)
- **$2,000** per month

That's more than 3 times the data amount for about 20% of the price.

This disparity of cost and service level indicate the hidden monopoly in the telecommunications market. It is not simply the deployment cost of towers and infrastructure that is keeping alternative service providers out of regional WA, but also the backhaul rates which are more than often confined to Telstra OF.

The coming of NBN will introduce further competition in the wholesale backhaul market, however it needs to be remembered that NBN is not designated to deliver to regional locations outside major towns as these customers will be serviced by NBN satellite. Hence NBN will only improve regional population centres, not farm businesses and rural areas.

Background publications

Case study (Empowering people to participate in the data services)

Red Hook, which juts out of Brooklyn into New York Bay and is cut off from the rest of the borough by the B.Q.E., has similar reasons for hosting a mesh (data network). The 11,000 or so residents can feel at the whim of nature, as well as government and corporate bureaucracies. There is no subway service; there are few Internet hot spots; close to 70 percent of the population lives in New York City housing projects.

When Hurricane Sandy struck in 2012, Red Hook was especially exposed. Cellphone service was down and Internet service was spotty. The lights were out. Water rushed through the streets.

After the storm, the divisions between the homeowners and the housing project residents were irrelevant, said Anthony Schloss, who helped create the mesh network through his work at Red Hook Initiative, a non-profit group. The initiative trains young residents like Mr. Smith to become “digital stewards.” Each steward works 20 hours a week (and is paid $8.75 an hour) as part of a year-long program that teaches skills including mesh networking, video production and web design, culminating in an internship. One steward now works at Sky-Packets, a mesh networking company on Long Island; another is with Pioneer Works, a Red Hook arts centre.

Though the mesh was in the works before Hurricane Sandy struck, it gained added relevance after the storm. The Federal Emergency Management Agency boosted the Red Hook Initiative’s broadband connection, so where the regular Internet was unavailable, residents and government workers could log on to the mesh to quickly find out where to pick up supplies or find government officials.

Although the Red Hook mesh promises a free web connection, its potential for intensely local communication also appeals to Mr. Schloss and Mr. Smith. “That’s our hope, that the network is used as a source of communication throughout the neighbourhood,” Mr. Smith said, adding, “We want to have both, that second layer, so if the Internet goes down we can still connect with each other through the mesh.”

Mr. Smith, who grew up and lives in the Red Hook Houses, is a very different kind of network administrator. Last year, he was one of 10 or so digital stewards. While other stewards left for jobs with a tech bent, Mr. Smith, a soft-spoken young man seemingly happy with his head bent over a laptop reading technical protocols, stayed to train the next class. He is now in charge of maintaining the mesh.

Mobile broadband (The most popular…but can’t be everywhere)

Telstra coverage can't be everywhere: The West Australian - July 10, 2014

Telstra chief executive David Thodey says customer expectations of its mobile network "to work everywhere" far exceed what it can actually provide, despite huge advancements in technology.

Speaking this morning at a WestBusiness Leadership Matters event which cantered on the need to celebrate innovation in Australia, Mr Thodey said West Australians needed to remain realistic about its mobile coverage.

"Your expectations of where you can use your mobile phone continues to far exceed what we can actually do," Mr Thodey said.

"You expect it to work everywhere, but technology is good, but it's not that good."

Telstra has gained market dominance in the mobile space over its rivals in WA, in part because of its ability to service regional areas.

Mr Thodey highlighted the public-private partnership with the State Government which resulted in the construction of more than 100 mobile towers in regional WA.

The wide-ranging speech also centred innovation in Australia, and how the country needed to become the smart country, not just the lucky country, through the development of a "culture of innovation" and the celebration of technological success.

Although he admitted Telstra was not the "poster child" for innovation, he said its moves into venture capital and funding of start-up companies was a sign of things to come. He said unless Australia embraced and supported innovators they would continue to leave the country.

"If you don't have a culture that celebrates innovation you're never going to get it," he said.

"But there is no policy framework … and there's very little money in terms of venture capital for new ideas. And why do all our smart minds from Australia go and live in Silicon Valley - because they don't get money here in Australia."

Mr Thodey also touched on the "disruption" of business models through technology and highlighted a suggestion from the chief executives of LinkedIn, who said all chief executives should learn how to code (create computer programs) to learn how easy it was to disrupt a business model.

There are people out there today, no matter which business you are in, who are thinking about disrupting your business model," he said.

"You may say well no, that can't be me, I'm in social services or in health or education . . . all these models are being disrupted because of digitisation, because of social media. And you've either got to be a victim of that emerging technology, or understand how you are going to take advantage of that."