Regional data access:
Connection to our economic future.

Preliminary briefing document:

Prepared by Nigel Metz – South East Premium Wheat Growers Association

(SEPWA)

Contents

SEPWA – Working document – Regional data access.

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.

SEPWA – Working document – Regional data access.

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.

SEPWA – Working document – Regional data access.

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."

SEPWA – Working document – Regional data access.

SEPWA – Working document – Regional data access.