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Dear ACCC

### **Mobile Roaming Declaration Inquiry**

I am pleased to present herewith a contribution to your deliberations on the issue of mobile roaming.

Having served on both of the past two Regional Telecommunication Reviews, one of the key purposes of this submission is to emphasise the importance to regional Australians of improving mobile coverage. In addition to social amenity, mobile connectivity brings growing opportunities to unlock real economic benefits in sectors that are vitally important to the well-being of regional Australia - such as health, education, transport, agriculture and the like. Indeed, if deprived of appropriate connectivity, Australia will increasingly fall behind "world best practice" in these sectors.

A more strategic view of the benefits of mobile connectivity is needed - one that looks beyond the commercial return-on-investment that is available to the mobile network operators. Adopting an appropriate aspirational goal for mobile coverage would help to put strategies for driving investment into a useful perspective and provide a benchmark for measuring progress.

My observation is that achieving improved geographic access to mobile connectivity is generally seen by regional Australians as far more important than gaining a choice of networks. Mobile roaming would be a positive step towards improving access where coverage already exists, but it does not of itself ensure that investment in extending coverage will continue.

This submission is a personal one and does not purport to represent the views of any other parties (in particular, members of the 2012 or 2015 Regional Telecommunications Independent Review Committees). Having said this, the content has been shared with a colleague (Alun Davies) from the 2012 committee to confirm support for the general thrust of the submission. The author has no conflicts of interest in the form of commercial relationships with any parties in the telecommunications industry.

Naturally I would be happy to elaborate on any of the thoughts presented in this submission if you find them worthy of further discussion.

Yours faithfully

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Attachment: 7-page submission

# Mobile Roaming: Issues and Alternatives

## 1. *Mobile coverage is the big issue*

In both of the past two regional telecommunications reviews<sup>1</sup>, mobile coverage emerged as the "hottest" issue for regional Australians.

It isn't difficult to understand why. Urban Australians typically live, travel and work in locations where there is good mobile network coverage. They rarely suffer difficulties in being able to communicate when and where they need to - and options for high-speed data access are enhanced by WiFi hotspots at home, at the office and in many public locations.

In contrast, a non-trivial number of Australians living in rural and remote areas have no mobile connectivity at home. Even where they do have mobile access at home, their lifestyles often require them to travel over routes or to work in situations where there is no mobile coverage. This poses issues not just in terms of social amenity, but also in terms of personal safety and in emergency situations.

In addition to voice communications, any-time, any-where access to data is at least as important to regional Australians as it is to their urban cousins. The ability to have real-time access to information such as commodity prices, weather forecasts, news feeds and the like can make the difference between struggle and success. Furthermore, the rapidly evolving "Internet of Things" (IOT) presents great opportunities to improve efficiency in many regional and rural endeavours. For example, maintaining Australia's traditional strengths in agriculture will increasingly rely on embracing innovative, best practice technology, much of it dependent on telecommunications.

Of course, IOT solutions will commonly involve a range of different technologies (*including narrowband*), but mobile network connectivity remains one of the most practical options for interconnecting local infrastructure with the world.

When considering regional coverage, MNO coverage claims based on percentage of the population with access (*assumed to be based on home locations*) are not especially relevant. Rather, the emphasis shifts to geographic coverage. Providing mobile access across 100% of Australia's landmass is not a realistic goal - there will always be a case for supplementary technologies (*notably satellite connectivity*) in the more remote areas. However, significant national benefits could accrue by:

- adopting the improvement of mobile coverage as a national priority (*the natural counterpart to fixed broadband connectivity that is currently being improved through the National Broadband Network (NBN) initiative*);
- setting appropriate aspirational goals (*like achieving coverage of all major highways and all communities above a certain socio-economic threshold*); and
- backing the vision with practical measures for expanding coverage to meet the goals that are set.

There are opportunities involving the NBN - these are discussed later in this submission. However, it is folly to think that the NBN (*as currently conceived*) will be the answer to all of Australia's connectivity challenges.

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<sup>1</sup> The author was a Member of both the 2012 and 2015 Regional Telecommunications Independent Review Committees (RTIRC) - see <http://www.rtirc.gov.au>. However, this submission offers a personal perspective.

An increasing number of Australians are opting for mobile-only connectivity rather than a fixed broadband connection delivered over the NBN. This trend is expect to continue:

- as higher-performing 5G technologies are deployed in the mobile networks; and
- if factors (like CVC pricing) either put upward pressure on fixed broadband pricing and/or compromise the end-to-end performance levels that are experienced in practice.

For many regional and rural Australians, the NBN offers (*at best*) an option for connecting to the digital world for the few hours in the morning and evening when they are at their home location. It is by no means a substitute for mobile connectivity.

## **2. The essence of the coverage challenge**

Infrastructure-based competition flourishes where there is a sufficient quantum of customer spending to attract investment and support multiple networks. With mobile networks, this is clearly the situation in the densely populated capital city areas - reflected by the substantial investment that all three mobile network operators (MNOs) have made, and continue to make, in improving both coverage and network capacity in urban areas.

As one moves away from the densely populated areas, the return on investment for MNOs becomes marginal - and the number of competing networks drops from three to two, then from two to one (mostly Telstra) and finally - for around 70% of Australia's landmass - from one to zero. This pattern is very clear if the coverage maps of the three operators are "massaged" graphically and amalgamated in a way that highlights the 3-2-1-0 coverage pattern - as is reflected in an indicative map of the Northern half of South Australia in Diagram-1<sup>2</sup> below.

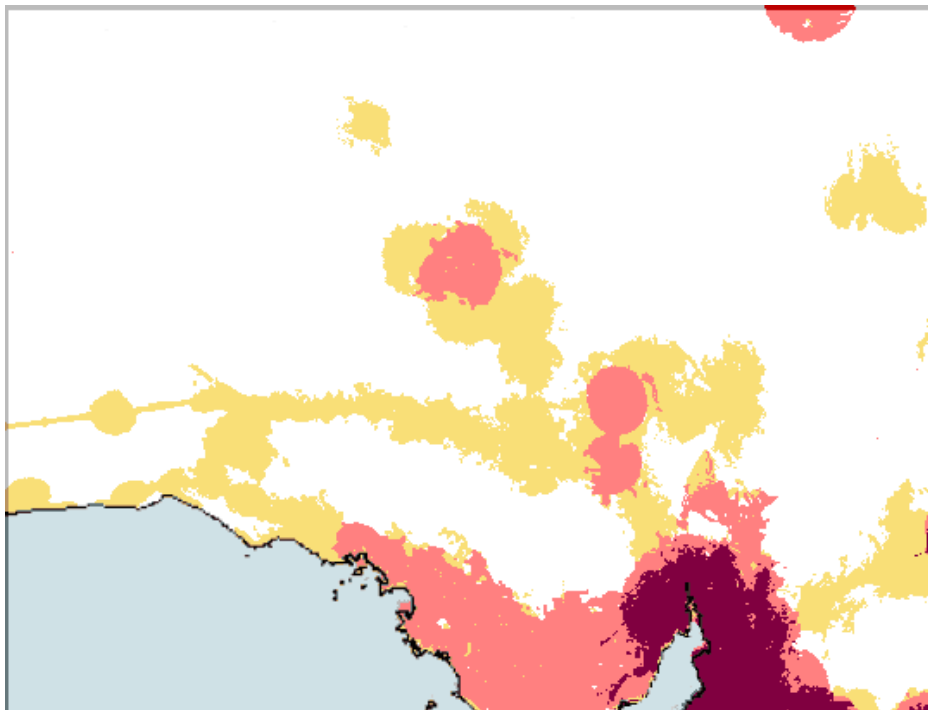


Diagram-1 Pattern of Mobile Network Investment in Northern South Australia  
(the darker the shading, the more mobile networks that provide coverage)

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<sup>2</sup> This diagram was prepared around 15 months ago using published coverage maps by the three MNOs. It does not necessarily reflect coverage at the present time, nor does it attempt to take into consideration differences between coverage using a superior antenna, 2G/3G/4G differences etc. Despite its limitations, the diagram clearly illustrates the dwindling level of MNO investment moving from densely populated (urban) areas to remote Australia.

The reality is that the towers that underpin coverage are expensive, and deriving a return on that investment relies upon attracting additional revenue generating customers and traffic. The return may be indirect - as in the case of Telstra investing more heavily in regional coverage in order to be able to boast the largest network footprint and thereby attract additional customers for whom coverage is a priority. However, without some form of tangible return, it is unrealistic to expect the market to continue investing in improving coverage.

### **3. Competition is a secondary consideration**

By its mandate, the ACCC is quite rightly concerned to maximise competition. However, the inherent nature of mobile connectivity reduces the importance of this issue for most regional Australians. All three MNOs compete vigorously to attract customers in the most lucrative (*high-density, urban*) areas of the market with a healthy array of plans<sup>3</sup> and pricing options, and resellers further enhance competition at the retail level.

Whilst ever mobile pricing doesn't include regional premiums, the benefits of this vigorous competition flow automatically to all users, including those in regional and remote areas. A choice of multiple networks is therefore not required in order for customers to enjoy the main fruits of competition.

Under these circumstances, it should not be a priority to pursue policies that promote infrastructure-based competition in areas of very low population and traffic density. If the economic justification for any one operator to deploy new infrastructure to expand coverage is (*at best*) marginal, it is wasteful to encourage multiple operators to invest in infrastructure that will never deliver an economic return. Promoting such investment would simply introduce inefficiency into the sector, and this would ultimately add to the costs for all users.

A sensible policy regime needs to recognise that infrastructure-based competition flourishes at one end of the spectrum, but fails dismally at the other. At the "failed" end of the spectrum, natural monopolies are the most efficient approach, supported (*if necessary*) by appropriate regulatory measures to prevent exploitation of the monopoly power over the market.

### **4. The Mobile Black Spot Program (MBSP)**

The MBSP and an earlier program in Western Australia have played welcome roles in expanding mobile coverage. However, in terms of geographic coverage, the small percentage extra coverage achieved (*or likely to be achieved*) through the \$220m funding announced thus far in three rounds of the MBSP is still only improving the situation at the margins, with additional geographic coverage estimated at just a small percentage of the landmass.

Some observations can be made about the program as implemented in the initial funding rounds:

- 4.1 Despite the involvement of communities in nominating black spots and contributing financially, the choice of new coverage locations includes a significant degree of carrier bias towards those sites that promise the best carrier return on the MNO's own investment component. As such, the locations that gain support under the program are not necessarily those that promise the best socio-economic return to Australia as assessed on broader principles - for example, taking into account the benefits to health, education, agriculture and the like.

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<sup>3</sup> Many plans now allow unlimited voice calls and text messages for very modest fixed monthly prices - with data quotas becoming more of a differentiator. Low-cost pre-paid plans allow users to maintain a second mobile network connection on another operator's network - for example, to provide enhanced access during a period of regional travel.

- 4.2 As the program continues and pushes into even more marginal areas, it is predictable that carrier returns will become more and more elusive. As a result, the MNOs' own appetite for contributing will progressively diminish and the level of community and public subsidy (*through the MBSP*) will increase. This presents the Government with an increased right to "call the tune" in regard to program rules.
- 4.3 It is acknowledged that the costs of sites, site access, power, tower and backhaul are significant components in the cost of providing new coverage. Nevertheless, for the reasons outlined in (3) above, the requirement for tower sharing is of marginal relevance<sup>4</sup>. If coverage is being extended into an area that doesn't make commercial sense for one operator, it is folly to encourage a second or third operator to invest in extending their coverage from the same tower. Attracting an additional operator into a marginal area does little if anything to improve overall coverage. Due to the low user density, one set of network infrastructure has abundant capacity to support the entire mobile communications payload.
- 4.4 In the absence of mandated roaming at MBSP-supported sites, the program creates anomalies. For example, and paraphrasing a comment made to the 2015 RTIRC: "Thanks for the new Vodafone tower in our area - now I will need to maintain two mobile accounts, a Vodafone account for the area covered by the new MBSP-supported tower and a Telstra account for the surrounding area".

If the MBSP continues or is expanded, one clear improvement to the outcome for regional Australians would be to ***make roaming mandatory on all new sites where the level of community or public investment exceeds a certain threshold.***

Whilst this would be unpopular with some carriers, it seems a reasonable principle that all Australians (not just the customers of any one carrier) should benefit when public tax dollars are substantially funding new infrastructure.

## **5. An alternative approach to improving coverage**

Recognising that the issue of mobile roaming is contentious with some of the MNOs, there is merit in exploring alternative approaches that could drive significant progress in terms of mobile coverage.

Following is the broad outline of an example of one approach:

- 5.1 Invite all MNOs to put forward in confidence their committed plans for expanding coverage over (*say*) the next three years. Based on these plans, identify the residual area (*lets call it "the underserved area"*) that has no prospect of achieving coverage through the operation of free market forces.
- 5.2 Permit NBN Co to integrate mobile coverage (*on a wholesale only basis*) with its Fixed Wireless (FW) solution in the underserved area.
- 5.3 If the MNO plans for expanding coverage do not materialise within the specified period, extend the boundaries of the underserved area accordingly.

Such an approach would recognise and respect the past and looming commercial investments made by the MNOs - allowing them to continue to pursue market differentiation and advantage based on mobile coverage.

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<sup>4</sup> In addition, it is understood (from anecdotal evidence) that some of principles for sharing MBSP-supported sites make it difficult in practice for another operator to deploy coverage at the site.

In so doing, it would create an anomaly: customers of an MNO that did not have coverage in an area where other mobile networks were available would transit through a "no service zone" before re-acquiring coverage on NBN Co-operated infrastructure.

Despite this anomaly, the resulting network investment could deliver a significant coverage improvements relative to the current situation, and the public investment involved (*through NBN Co*) would benefit all Australians.

The approach outlined has several advantages in terms of investment efficiency over the alternative of encouraging individual MNOs to expand into the underserved areas:

- 5.4 NBN Co's FW technology is inherently a mobile technology, adapted to support fixed connections only. With appropriate engineering, the same base station electronics may be able to support both fixed and mobile connectivity. At worst, a separate set of base station electronics could be deployed on NBN Co FW sites - sharing access, tower, power and backhaul. Integrating FW and mobile coverage would thus boost the return on investment of NBN Co's FW sites.
- 5.5 NBN Co already operates on a wholesale-only basis, and (*assuming all three MNOs were to take up its offer of wholesale-only mobile coverage in the underserved area*), the solution would immediately support the customers of all three MNOs - capturing 100% of the mobile traffic. This is intrinsically a better outcome than any one carrier could achieve from their customer base alone.
- 5.6 It is foreseeable that NBN Co's long-term satellite solution (LTSS) will come under increasing pressure over time. Whilst the LTSS offers a major boost in capacity relative to the interim satellite solution, it is also required to support 6-8 times the number of customers. Traffic quotas are being imposed to stretch the life of limited satellite capacity, but if satellite users were liberated to use the network as freely as their urban cousins, the LTSS would very quickly become as saturated as the interim service.

Even without allowing equity in traffic quotas, data volumes continue to grow every year by (indicatively) a third. Once saturation is reached, it will be necessary to either acquire additional capacity or to shed around a quarter of users each year in order to maintain the same level of performance for those continuing on the satellite service. Expanding the FW footprint in the underserved area would provide an alternative for displaced satellite users (*giving them improved performance as a bonus*) and avoid or at least defer the need to invest in additional satellite capacity.

- 5.7 A final boost to the economic efficiency of the approach could be achieved if the Government were to make an in-kind investment in NBN Co in the form of some of the unsold 700 MHz spectrum, perhaps limited to the underserved area. Because of the longer reach attainable at lower frequencies, use of the 700 MHz spectrum would allow the creation of larger serving areas, allowing the aggregation of more users and traffic in each cell. Given the relatively flat topography of much of the underserved area, the 700 MHz spectrum is especially valuable in the more remote parts of Australia.

In summary, the alternative solution outlined promises a 6-dimensional increase in investment efficiency compared to any single carrier deploying new mobile towers to serve only their customers:

- it captures revenue from fixed wireless customers;
- it captures wholesale revenue from the mobile customers of not one, but all three MNOs;
- it captures revenue from displaced satellite customers; and
- if 700 MHz were available, larger cells could be created.

## 6. *Flipping the alternative model in its head*

Recognising the likely contentious nature of the solution outlined in (5) above, some of the same benefits can be captured by flipping the model on its head. Instead of authorising NBN Co to offer wholesale-only mobile services, MNOs could be encouraged to integrate FW services into their networks, providing an additional revenue stream to improve the business case for extending their coverage in areas of low population density.

In broad terms, such an approach might involve:

- 6.1 MNOs would need to develop the ability to differentiate between FW customers and mobile customers, offering FW customers plans that are consistent with those offered on NBN Co's own FW infrastructure<sup>5</sup>. In general, capacity is less of an issue in areas of low population density and telecommunications traffic, so the additional capacity needed to support FW customers should not be problematic.
- 6.2 MNOs would need to bring back all FW connections to NBN Co's Points of Interconnect (POIs), and a "sub interface" (*both in terms of technical and business-to-business communication*) would need to be devised so that these circuits could be transparently integrated with NBN Co's own circuits and in turn, made available to RSPs.
- 6.3 A revenue sharing model would need to be developed so that the MNO received an appropriate share of the wholesale prices that NBN Co charges RSPs. NBN Co would avoid the costs of network deployment, but still derive a margin on the "aggregation services" that it would be providing.

This approach does not achieve the same investment efficiency as authorising NBN Co to offer wholesale-only mobile coverage, but it has potential to attract additional investment in mobile coverage at the margins.

As a side-note, if NBN Co were to support "delegating" broadband access provision to third-party network operators where it was efficient to do so, the model could find wider application with benefits to fixed broadband users in certain areas Australia. Specific examples include:

- Greenfield fibre-to-the-premises (FTTP) network operators. This would avoid inefficient "overbuilding" by NBN Co whilst giving the residents of these estates access to the full array of retail service providers (RSPs) who utilise the NBN.
- Fixed wireless network operators in regional Australia. Many of these deliver an excellent service (*with better performance than is achievable from a satellite connection*), but their viability is under threat from the publicly-subsidised NBN rollout.
- Other networks (*such as TransACT's FTTK network in Canberra*) where existing infrastructure is capable of cost-effective upgrade to deliver speeds in the hundreds of Mbps and where overbuilding the NBN would be an order of magnitude more expensive to achieve competitiveness in terms of performance.

In all of these cases, the approach would leverage existing infrastructure where it is capable of delivering the minimum standards of services adopted by NBN Co. As such, it is far more cost efficient than duplicating infrastructure investment and striving to undermine the businesses of third party network providers in an effort to establish a new monopoly in fixed broadband access.

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<sup>5</sup> The technical feasibility of this has not been ascertained - but as with the approach outlined in Section 5, the need for a separate set of base station electronics is the "worst case" scenario. The solution would still benefit from amortising site access, tower, power and backhaul costs over a broader revenue base.

## **7. On the more general question of mobile roaming**

Individual MNOs (notably Telstra) have invested in superior regional coverage - not necessarily because it makes commercial sense per se, but rather that it serves to attract additional customers and boost market share. This is a legitimate investment and deserves to be respected.

At the same time, investment in expanding mobile coverage is not running at the level required to equip Australians with access to the mobile services that are needed for maximum socio-economic benefit. Further initiatives, typically involving a level of public funding, will be required to have a material impact on the situation. These may take the form of additional MBSP rounds or alternatives such as those outlined in this submission.

To the extent that public investment in expanded coverage grows through the MBSP or similar programs, it is reasonable to expect that all Australians should benefit and therefore mandatory roaming is an appropriate expectation for sites significantly funded from the public purse.

It is recognised that imposing this requirement may lead to one or possibly two operators boycotting the scheme - at least in the short term. However, it is unlikely that all three MNOs would walk away from a subsidised opportunity to improve their coverage (*and hence market appeal*). Further, the prospect of a new MNO gaining a lead in regional coverage (*supported by tax-payer subsidies*) is considered likely to eventually see to all carriers resuming healthy contention for any funding that is offered through schemes such as the MBSP.

With respect to coverage that has been established by past investment, a practical approach may be to foreshadow mandatory roaming at a future date if the carriers cannot reach roaming agreement through commercial negotiations. This would provide a stronger incentive to pursue customer-focused outcomes than has prevailed in the past.

Of course, commercial negotiations may lead to geographic price differentiation - for example, premiums that become payable when accessing mobile services through infrastructure operated by other than the customer's own carrier. Whilst these would represent a complication relative to the geographically independent pricing principles that prevail today, the benefits of giving all Australians (especially those in regional areas) improved mobile coverage are substantial. Furthermore, customers would retain the flexibility to choose the MNO whose network footprint best meets their needs.

## **8. Summary**

In summary:

- Coverage, not competition, is the key consideration for regional Australians.
- Australia needs to recognise the importance of improving coverage, set aspirational goals and implement measures that will see those goals achieved.
- Further funding under programs such as the MBSP can help, but above a certain threshold of public subsidy, roaming should be a mandatory requirement.
- Where the limits of carrier co-investment are reached, investment efficiency could be optimised by authorising NBN Co to integrate mobile coverage with its FW platform, operating on a wholesale only basis to support the customers of all MNOs.
- As a weaker alternative, NBN Co could delegate FW access to the MNOs, giving them an additional revenue stream to improve returns on investment.
- Foreshadowing mandatory roaming at a future date if MNOs cannot reach commercial agreement may unlock progress on the broader mobile roaming front.

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