World Without Wires Pty Ltd

Submission in response to: ACMA 1.5 GHz and 3.6 GHz discussion paper - October 2016

Executive Summary

The business was established in 2004 with the sole focus to provide high quality broadband services to underserved communities, since then we have expanded the business to cover 18,000 square kilometers, we serve over 2500 residents and businesses within the local region many of whom would have no adequate alternative internet supply.

We directly employ 10 people and use numerous other local professional contractors to build and maintain our own fixed wireless network.

From it’s inception our business has been privately funded, we have continued to expand driven by customer demand and reinvestment of profits.

Our customers range from Residential Home services to Small, Medium and Large enterprises, we service all sectors of the economy including, Agriculture, Mining, Industrial, Education.

This is primarily achieved using the latest in fixed wireless broadband technology, we are incredibly active in the research and development of new products, with extensive engagement with vendors.

We continually evaluate and deploy new technologies faster than larger competitors and have motivation to ensure high quality regionally focused services are provided to niche markets, often ignored by large carriers.

We have a substantial interest in the continuation of the existing apparatus licensing regime, we believe that a majority of the justification for refarming cited by the ACMA is already current in our businesses.

Previous re-farming indicates a reliance by ACMA on auction processes which inevitably favour those with the deepest pockets, cementing reduced competition.

Changing the existing apparatus licensing of the 3.6GHz to spectrum licensing would be grossly inefficient, potentially depriving smaller carriers access to the spectrum and leaving customers needlessly abandoned or unserviced.

Restricting the allocation of the 3.6GHz band to spectrum licensing regime would immediately and permanently exclude Australia from international best practise, which is
currently being developed to allow a more dynamic shared model, facilitating genuine 5th generation (5G) broadband services.

The framing of this discussion paper is somewhat misleading, the premise that the spectrum should be “re-farmed” to promote the use of MBB services, firstly suggests that there are currently no broadband services being delivered and secondly does not make the distinction between Mobile Broadband and Fixed Broadband services.

Mobile broadband services are those which have been optimised for mobility and the network engineering and economic models which underpin these networks differ vastly from those of a fixed broadband network.

It is vital that the distinctions are made clear, the efficiency of spectrum when optimised for mobility is vastly different than that of fixed wireless, in a majority of cases fixed wireless services operate at extremely high efficiency through stable signal levels and high modulation rates, whereas mobile services typically optimised for small handsets and mobility dedicate more air-time at lower efficiency to achieve the same available bandwidth.

The ACMA’s definition of highest value use is far too simplistic. It does not take into account the cost of current incumbents direct employment, indirect employment, sunk investment, stranded assets or the value of the services to current customers especially SME’s.

The recent geographic extension of the embargo of 3.6 GHz apparatus licensing areas is extremely concerning, this action would indicate that the ACMA has an intended outcome to the “initial discussions” and is willing to take preemptive action.

**Invitation for specific comments**

1. **ACMA** - *Should the 1.5 GHz band and/or the 3.6 GHz band be progressed from the initial investigation stage to the preliminary re-planning stage in the ACMA’s process for consideration of additional spectrum for MBB services? Why/Why not?*

Yes, we support the general premise to refarm certain geographic regions of each band, however we do not support changes which would have an adverse impact on regional and remote use of these bands for existing fixed wireless services.

The 3.6 Ghz Band, we believe the current apparatus licensing regime for spectrum allocation is working well, it facilitates access by smaller carriers who typically provide unique services to underserved sections of the community.

Ideally we would like to see this same apparatus licensing allocation methodology extended to metropolitan areas, this would allow smaller carriers to offer services in competition to the larger carriers, promoting competition will lead to better services at lower prices.
2. **ACMA** - _Should either of the 1.5 GHz and 3.6 GHz bands be prioritised through the ACMA’s process for consideration of additional spectrum for MBB services? If so, which band? Why?_

   Yes, we believe 1.5 GHz should be prioritised over the 3.6 GHz band as this would reduce the impact on incumbent 3.6 GHz fixed wireless users.

3. **ACMA** - _Are there specific issues, other than those mentioned, that may affect the timeframe in which the 1.5 GHz or 3.6 GHz bands could be made available for MBB?_

   Yes, there are many incumbent users in both bands, however there are a large number of existing fixed wireless users in Regional and Remote areas, these users typically are unable to secure any other suitable services.

   It would be extremely politically difficult to justify “Refarming” the 3.6Ghz spectrum for MBB use in this area given it is already being used to deliver those very services, any action in this space will almost certainly lead to large numbers of existing customers being left without broadband access all together.

   The consequences to consumers from an economic and social perspective could be catastrophic, without adequate broadband services many users simply could not operate in these regions.

   A suitable alternative band must be made available for smaller carriers prior to any changes.

4. **ACMA** - _If the 1.5 GHz and 3.6 GHz bands are re-farmed for MBB, would there be benefit in allocating the bands simultaneously?_

   Yes, prioritisation of 1.5 GHz over 3.6 GHz would reduce the impact on incumbent services providers, there are a large number of existing fixed wireless users in the 3.6Ghz band, these users would need special consideration, which may cause extensive delays.

**Questions specific to the 3.6 GHz band :**

5. **ACMA** - _The ACMA seeks comment on expected future use of the 3.6 GHz band by fixed, fixed satellite, amateur and radiolocation services in Australia._

   The existing apparatus licensing regime allows telecommunications carriers to identify where there is likely to be demand for MBB services, then based on this market demand apply for spectrum to cover that particular geographic region.

   The major advantage of taking this granular approach is the ability to consider other operators on an allocation by allocation basis, Amateur and fixes-satellite operators are secondary and should operate within the noise or vacate the band.
In the event that this band were to be refarmed to a spectrum licensing regime we would likely find large geographic areas covered by the license, that the current owner has no intention of ever occupying.

This would be grossly inefficient, potentially depriving smaller carriers access to the spectrum and leaving customers needlessly abandoned or unserviced.

6. ACMA - If the 3.6 GHz band is re-farmed for MBB services:

a. ACMA - Do you agree that a time division duplex (TDD) arrangement should be adopted? Why/Why not?

Yes, TDD is far more efficient, as the up and down link ratios can be varied depending on customer requirements, these requirements may change and TDD gives carriers the ability to react.

b. ACMA - Should all or only part of the band be considered for re-farming?

Only the metropolitan embargoed areas should be considered for re-farming, we strongly encourage the ACMA to look at extending the existing apparatus licensing regime to the currently embargoed metropolitan areas.

We strongly discourage the ACMA from re-farming the existing 3.6Ghz broadband wireless access apparatus licences in regional and remote areas, as mentioned above this will certainly have catastrophic effects on tens of thousands of existing users of these services.

We would also encourage the ACMA to investigate extending the existing apparatus licensed allocation regime to the Lower (3.3 GHz - 3.4 GHz) and Upper (3.7 GHz - 3.8 GHz) bands.

Recent spectrum review consultation strongly suggests a move to a single license type with tenure of thirty years – taking into account original release in 2006. Recent ‘public interest’ renewals also indicate 30 years.

c. ACMA - Should different amounts of spectrum be re-farmed in different areas?

There should be no change to existing licensing regime for regional and remote areas.

If the ACMA takes the decision to refarm existing 3.6Ghz spectrum in regional and remote areas, one possible way to mitigate the harmful effects of this action could be the reservation of a part of this band for apparatus licences,
for example 3575 - 3600 which would leave 100Mhz that could be auctioned off.

7. **ACMA** - If the 3.6 GHz band is re-farmed for MBB services, what geographical areas should be considered?

   Metropolitan only, this would have the least possible impact on the provision of existing wireless broadband services.

8. **ACMA** - If the 3.6 GHz band is re-farmed for MBB services, should existing users (some or all) be allowed to continue operation within the band, either temporarily or on an ongoing basis? Should/could sharing arrangements be developed? Should sharing only be considered for some services or specific licences? If yes, what kind of arrangements would be suitable to support the ongoing operation of incumbent services or specific licences? If no, why?

   Yes, existing license holders should be allowed to continue to operate, significant investments have been made by businesses in equipment to provide services using this band, disallowing the continued operation would be extremely anti-competitive and in direct contradiction of the ACMA stated principles of certainty.

   Given that this discussion paper is framed around allocating the 3.6Ghz band for the use of MBB services, we would strongly advocate that existing MBB services should continue to operate in this band on an ongoing basis.

   In the event that the entire band is sold at auction, sharing arrangements with existing licenses must form part of the spectrum license conditions.

   We note the international trend toward a “use it or share it” model, where spectrum licence holders would be required to accommodate other uses within the band in the event they were not actively utilising the resource.

   The ACMA’s current spectrum allocation methodology seems to be quite outdated, by defining large geographic regions and in turn commanding a high price for the resource. Alternative models are being adopted internationally where licences are granted in much smaller geographic areas and are at a far lower cost, thereby changing spectrum from an asset to an expense, the implications are far greater utilization of the resource, more competitive markets, lower prices and better service.

9. **ACMA** - If the 3.6 GHz band is re-farmed for MBB services, and migration of incumbent services is required, are there alternative spectrum or delivery options?

   There are currently no alternative bands available of delivery of licensed fixed wireless broadband services.

   As a general rule the incumbent users provide services into markets where
alternative delivery options are limited or non-existent, regional and remote areas are ignored by larger carriers as they lack population density and are therefore not profitable, this is precisely the market in which we operate.

We provide high quality services to customers who generally have limited or no other suitable alternatives.

The ACMA would need to make spectrum available and facilitate a progressive migration, failure to provide alternatives would likely destroy local businesses with significant political fallout.

10. ACMA - In determining whether to re-farm the 3.6 GHz band for MBB, are there any adjacent band issues that should be considered? This includes:

a. ACMA - the effect such use may have on adjacent band services

Given that the stated objective is to facilitate the increase of broadband services, we would strongly suggest that making more spectrum available instead of less would be a more prudent approach to take.

Frequencies from 3.3GHz to 3.8GHz are already being used globally to deliver broadband services, other than stifling competition we see no reason to specifically target the 3.6GHz band for re-farming.

Especially given those who whose users actively deliver the very services the ACMA is purporting to promote.

b. ACMA - The effect adjacent band services may have on the utility of the 3.6 GHz band for MBB services.

The impact of adjacent band service can be mitigated by selectively allocating apparatus licenses, for example a satellite ground station could have a 20 Km exclusion zone, the ACMA could mandate the use of receive filters and protection could be limited.

operates in a remote area of australian in an adjacent band, this is unlikely to have any effect on MBB services as there may not be any operating or could have sufficient guard bands.

Current out of band protection to FSS is difficult to work with. FSS earth stations don’t seem to be fitted with receive filters. A simpler co-ordination system should be devised: Max radius of 20km beyond which no co-ord required, that FSS in the C band not be afforded protection beyond best endeavours.
11. **ACMA** - If the 3.6 GHz band is re-farmed for MBB services, should the ACMA review arrangements in the broader 3400–3700 MHz band? Why/Why not?

If the 3.6 GHz band in metropolitan areas are aligned with current arrangements then no further work is required.

However ITU identification would generally mean Telstra, Optus, Vodafone and NBN will attempt to occupy the spectrum. Members
They will likely be allocated 1.5GHz and should be restricted from directly occupying 3.6Ghz until 2036.

Directly means via licensing from ACMA – eventually they can occupy it but not until additional spectrum has been made available over 3700.

In the lead up to 2036 ACMA should prepare the 3700 – 4200 for the wisps to migrate to. Wisps can then choose to relocate – some could do so sooner and on sell their 3.6 spectrum to the carriers to defray some migration cost.

12. **ACMA** - Would such a review be facilitated through the alignment of geographical boundaries in the 3.6 GHz band with existing boundaries defined for spectrum and apparatus licensing in the 3400–3575 MHz band (that is, to facilitate trading)?

No, trading will only assist spectrum license holders and would almost universally exclude any smaller carriers, to this effect we would not support this measure.

13. **ACMA** - Is there anything else that could be considered as part of the 3.6 GHz band process that may facilitate a future review of the broader 3400–3700 MHz frequency range?

In the event that the 3.6 Ghz (3575 - 3700) was to be refarmed for spectrum license allocation and the existing apparatus license holders be directed to cease operation in this band, an alternate apparatus licensed spectrum allocation could be made available in the lower 3.5 GHz (3400 - 3575) band or above in the 3.7GHz to 4.2GHz so continued operation would be possible.

14. **ACMA** - Comment is sought on the ACMA’s proposal to progress the 3.6 GHz band to the preliminary re-planning stage of its process for consideration of additional spectrum for MBB services, as detailed in the ACMA’s mobile broadband strategy.

The ACMA’s mobile broadband strategy states that “Mobile broadband services deliver substantial economic and societal benefits to the Australian economy and community.”

“The development of spectrum management arrangements that support the growth in mobile broadband capacity must therefore continue to be balanced with the ongoing
requirements for other uses of the spectrum.”

Highest Value Use - “The ACMA acknowledges that the highest value use of spectrum will vary between different frequency bands and locations.”

“The ACMA also acknowledges that the value of a particular use may have a social as well as a monetary aspect”

It would be very hard to politically justify the removal of one group of carriers already supplying MBB services in regional and remote areas to users in favour of a larger carrier, this could easily be interpreted by the public as political favours for one carrier at the expense of many others, or at worst outright corruption and a blatant money grab at the expense of regional users.

15. ACMA - To assist the ACMA in conducting a comprehensive assessment of the highest-value use for the 3.6 GHz band, responses to the following questions are requested:

a. ACMA - Do you see increasing demand for fixed broadband/MBB services in the 3.6 GHz band? What benefits do you envision from using the band for fixed broadband/MBB services?

Yes, we see an increase in demand for broadband services across all sectors of the economy. The benefits from increased use of the 3.6 GHz band in a fixed wireless environment is proven and substantial, regional and remote areas of Australia are routinely ignored by large carriers and as a result there is a significant portion of the population left under serviced.

This is evident by the more than $300 million dollars the Government is willing to invest in fixed orbit satellite services.

Each customer serviced by our business is one less that will require heavily subsidised (non-economic) services from the NBN.

In summary each customer served using 3.6Ghz spectrum in a fixed wireless deployment will increase government revenue through apparatus licensing fees and reduce costs, up to $8000 per connection through indirect subsidies to the NBN.

If the genuine motivation for refarming this spectrum was to improve broadband services for the population of Australia, we would see increased availability for the very carriers which have a proven method and are currently providing services.

b. ACMA - Which regions of Australia will be in demand for fixed broadband/MBB services in the 3.6 GHz band?
There is a general demand for good quality broadband services across Australia, however specific market segments would benefit from this band in different ways.

> Regional and Remote areas - Existing Fixed wireless services are almost exclusively being delivered using fixed broadband technologies, these services are targeted at residential and small to medium enterprises.

> Metropolitan areas - This market may be broken up into two groups, those without adequate fixed line services and those requiring a fixed line service alternative.

> Inadequate access - Although the majority of metropolitan areas are well serviced, there are a number of fringe areas which have little or no suitable broadband access options, these tend to be smaller residential or industrial estates, the economic impact on these areas can be significant, businesses simply cannot operate without access to high speed internet, access to 3.6 Ghz spectrum for smaller carriers would allow high quality services to be delivered into these areas.

> Fixed Line Alternative - Broadband services are an integral part of most business operations, many simply cannot operate without access, as a result there is substantial demand for backup internet services. To achieve adequate protection these services must be provided via an alternative medium and preferably by an alternate carrier, this can only be achieved if there are other competitors in the market, the idea of promoting and maintaining monopoly carriers like NBN or Telstra does not support diverse backup services.

c. ACMA - Is demand the same or similar across regions, or are some regions/areas more likely to be in demand for MBB providers?

The demand would vary across regions.

> Regional and Remote - 3.6Ghz band is most suitable for fixed over mobile broadband due to frequency propagation characteristics.

> Metropolitan - 3.6Ghz could be used as a supplementary band for LTE-A however the marginal increase in speed would have to be weighed against requirements for primary and backup services.

d. ACMA - Do incumbent 3.6 GHz band licensees require ongoing access to the band, or are there plans to cease operation at some future point?

Incumbent operators especially those supplying fixed broadband services
have no plans to cease operation and would certainly require ongoing access to these bands.

The majority of users who are already providing fixed broadband services in the 3.6GHz band are doing so using the latest available technology, be that either LTE or Proprietary standards in which support for Massive MIMO is scheduled for release Q2 2017.

The values that the ACMA proponent to be encouraging, seem to be exemplified by Wireless ISPs who have deployed fixed broadband services in this band, the mere suggestion that we and other like us whom are already providing these services may be required to vacate, can only indicate there is an ulterior motive other than what is being publicly espoused.

e. ACMA - *Do other options exist for the delivery of fixed, fixed-satellite and amateur incumbent service, how practical are they? What are the costs involved? Will there be a diminution of the service delivered if MBB services are introduced in the band?*

We are not aware of any other apparatus licensed point to multi-point band which is available to deliver MBB services.

The current spectrum licensing regime tends to favour very large carriers which have the scale to benefit from such an expensive purchase.

The release of apparatus licensed spectrum for MBB use was extremely valuable, and allowed smaller operators to fulfil market demand which was unable to be served by existing operators.

f. ACMA - *Should further consideration be given to the migration of incumbent 3.6 GHz band FSS earth stations to low density population areas?*

Spectrum licensing particularly in regional and remote areas tends to be an very blunt instrument, it assumes that the buyer of the spectrum has the capability and motivation to utilise this resource to it’s maximum efficiency in all areas.

This would likely lead to existing users being prevented from using a resource in an area where the license holder has no plans to use it themselves.

Large carriers tend to operate under different economic conditions that those smaller carriers, they have a larger operational overhead and as a result evaluate the profitability of deployment in certain areas differently that those who may have smaller operations and less financial overhead.

Smaller carriers that may be regionally focused will have far better knowledge
of customer demands, they also have the motivation and resources to dedicate more attention to the local community they serve.

When evaluating the viability of serving a specific customer base, smaller carriers who carry less overheads, are more often able to viably deploy infrastructure in areas which are uneconomical for larger carriers.

Many users of existing MBB services currently being delivered by smaller ISP's would have no comparable options should refarming exclude incumbent carriers.

Sincerely,

Dainen Keogh - CEO
World Without Wires Pty Ltd