



Radio Spectrum Five Year Outlook 2017-21: Draft

**Comments to the Ministry of Business,
Innovation and Employment Radio
Spectrum Management Team (MBIE RSM)**

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1 Introduction

Access to mobile and wireless broadband radio spectrum, together with a radio spectrum framework that promotes long term investment certainty and consistency, is a key concern for 2degrees and is critical to the industry's ability to deliver world leading mobile and wireless broadband services to New Zealanders.

2degrees has a strong interest in MBIE's Radio Spectrum Outlook and the regulatory framework that governs it, and is keen to work with MBIE to ensure RSM's proposed work programme considers and reflects key issues and concerns of industry participants, including addressing significant concerns that 2degrees (and other industry parties) have identified with the existing regulatory framework for wireless broadband.

2 2degrees continues to make substantial investments to further disrupt communications markets

The Government's approach to mobile and wireless broadband spectrum is all the more imperative in the context of how this spectrum will allow 2degrees, as the significant late investor and market disrupter, to continue to maintain large-scale competition, innovation and investment in the New Zealand market.

When 2degrees entered the New Zealand mobile market in 2009 prices were high and usage was low. MBIE is fully aware of the disruptive changes 2degrees has brought to the New Zealand mobile market, including substantially lower prices, increased usage and innovative products which have collectively driven wider investment and innovation across the industry.¹

Fundamental to this has been 2degrees' commitment to national infrastructure and innovation. 2degrees' investment, including the deployment of a national mobile network, now exceeds \$700 million. With 2degrees' own network now covering over 96% of the population, as well as a national UFB-driven fixed business and shareholder changes that enhance its ability to secure additional funding, 2degrees is now in a strong position to further disrupt the market.

Our aggressive network roll out extending 4G coverage (at the same time as expanding population coverage) continues, and planning is underway to launch carrier aggregation services which over time (subject to spectrum access) can deliver services of in excess of 1Gbps.

2degrees is also enhancing competition in the underserved business market and providing machine-to-machine (M2M services). Beyond its 1.3 million mobile prepay and postpay subscribers, 2degrees now serves large organisations such as the Ministry of Primary Industries and has M2M customers across a range of industries. We are also actively engaged in developing IoT opportunities, for example through our June 2016 Collaboration Agreement with NEC (which includes opportunities in utilities, smart cities and advanced data analytics).

¹ As MBIE have noted, New Zealand is ranked above average in the OECD for mobile broadband and is at the forefront of machine to machine connectivity.

To stimulate further competition, 2degrees helped establish Warehouse Mobile and is [C-I-C].

As recognised in MBIE's Draft Spectrum Outlook, consumer demand and expectations for mobile data and bandwidth intensive mobile applications are increasing exponentially. 2degrees' data traffic has more than doubled in the last two years alone. Demand for new spectrum is increasing, with 1Gbps services, which require additional spectrum capacity, already being deployed internationally.² The vision for 5G/IMT-2020 is for speeds of 10Gbps³.

At the same time revenues are being squeezed with global and OTT players such as Skype, Google, Amazon, Netflix and Paypal capturing many value opportunities, and with Government requirements for further wireless rollouts. These include 700MHz implementation obligations, the Rural Broadband Initiative and Mobile Black Spot programmes (in turn, funded through industry levies).

These collective developments mean the investment environment is becoming increasingly challenging for all mobile network operators. MBIE should place even greater importance on Government creating an environment that provides a stable, predictable regulatory environment for spectrum, in order to encourage the substantial investments required by operators to serve consumers.

3 There are significant issues with the current spectrum framework for wireless broadband

The current spectrum policy framework has failed to promote investment certainty, with operators facing an inconsistent and unpredictable regime⁴.

The framework has become confusing, non-transparent and too ad hoc, with parties not knowing how future decisions will be based, or who will make them.

Unfortunately, in our experience, the current regulatory framework:

- Has no clear and consistent framework: Process based decision making has resulted in inconsistent and arbitrary outcomes. The lack of an allocation framework has meant that different tests and criteria, including competition assessments, have been applied to different spectrum bands. 2degrees seeks far greater certainty on access to the spectrum it needs to deliver key consumer services.

² See for example, *Telstra's superfast 1Gbps network lets you download an HD movie in three minutes*, Kyle Wiggers, January 31, 2017 available at: <http://www.digitaltrends.com/android/telstra-1-gbps-network/#ixzz4YicWMnS8>.

³ While technology improvements help and will also improve consumer experience, this will not nearly address the need for more spectrum. Further these improvements are available to all operators, and so do not address spectrum imbalances. Notably, 2degrees are investing in newer, more efficient technologies including LTE, Carrier Aggregation (including intra-band), refarming and Wi-Fi offloading.

⁴ We understand that RSM also deals with accessing radio frequencies useful for a wide range of Government and private users (both social and commercial). Our comments are based on our experiences of the spectrum regime related to spectrum allocated or potentially allocated to mobile/wireless broadband use.

- Has rewarded significant breaches of implementation obligations, and continues to encourage speculative investment in spectrum: The recent MBIE decision in the 2.6GHz spectrum is an example of such decision making. An important policy decision with long term spectrum allocation implications has been treated as administrative, without the opportunity for interested parties to inform MBIE assessments. The current process being followed for 3.5GHz, where we understand MBIE has conducted discussions with current management rights holders and licence holders regarding the future use of this band, rather than a wider consultation that includes all future potential users, is of concern.
- Has not adopted competition checks to address spectrum imbalances that exist in the market. This has allowed larger players to maintain market advantage through spectrum acquisition e.g. 700MHz.
- Has not addressed concerns with the interference framework to address newer technologies nor the competition framework, such as following advice from the independent competition expert, as required for commercial transactions. Industry submissions on potential changes to the Radiocommunications Act were received in 2014 and 2015.

2degrees is extremely disappointed and concerned with MBIE's surprise reversal of position and decision to waive 2.6GHz implementation obligations for certain spectrum, despite previously indicating to other participants that relief would not be available. [C-I-C



We do not consider that our experience is consistent with RSM objectives for managing the radio spectrum nor a world leader in spectrum management. Such decision making will result in market power and increased profits to particular players at the expense of New Zealand consumers.

In comparison we note the RSM operational team have provided good and helpful support, including providing the world class SMART database, licencing, and in relation to investigation of interference.

4 2degrees is keen to work with MBIE to address these issues with the regulatory framework


Given the importance of wireless broadband to New Zealanders it is important to address the above concerns. As a significant player in wireless spectrum we want to work with MBIE and Government to improve and implement the current spectrum framework for spectrum management.


We are keen to:

- Ensure RSM is well resourced to both address domestic spectrum concerns and to participate in key international discussions, including staying ahead on mobile evolution and emerging technologies such as 5G and beyond. To this end we support MBIE plans to attend international fora in this area.
- Ensure the benefits of New Zealand achieving important spectrum decisions internationally are realised locally (for example in IoT and 5G). Successful international outcomes do not always translate to successful national outcomes - it is the success of implementation that determines the impact on New Zealand. This was true of the 700MHz allocation and will also be true for future bands such as 5G in 3.5GHz. (Consultations regarding use of bands that do not include future potential users do not provide confidence in the approach).
- Ensure spectrum in key mobile broadband bands is not hoarded or under-utilised, nor speculation in spectrum rewarded (for example to be sold to players later).
- Ensure spectrum renewals support the continued large-scale investment required to achieve the Government's objectives, and do not reduce the holdings of the third entrant, which is already at a spectrum disadvantage and well recognised by Government as bringing substantial competition to the market.
- Ensure key policy decisions that impact multiple parties are transparent and informed and made in the long term interests of New Zealanders, and that there is a clear allocation framework for future wireless broadband allocations, for example 3.5GHz, L-Band and sub-1GHz bands. This includes a more transparent, futureproof and inclusive process for decisions and consultations on allocation, which tests party submissions on competition input.
- Ensure competition and interference issues are understood and addressed, including via progressing the Radiocommunications Act review: Notably, the Radiocommunications Act was introduced almost 30 years ago and the last major amendment was well over a decade ago. During this time the spectrum environment has changed significantly but the regulatory framework has not adjusted to take this into account, despite an extensive industry consultation process in both 2014 and 2015. To be a world leader in spectrum management the Radiocommunications Act needs to evolve and provide the ability to cope with competition concerns and interference related to newer technologies.

5 2degrees comments on specific Work Plan Action Points

The following table provides comments on specific work plan action points as set out in MBIE's Draft Spectrum Outlook. In addition, we note it would be helpful if MBIE include Indicative Completion Dates for projects in the final version of the Spectrum Outlook.

|  <p>WORK PLAN ACTION POINT</p> | <p>2degrees comments</p> |
|---|---|
| <p>RSM will participate in the ITU studies (Working Party 5D) related to IMT-2020 (5G) leading to the spectrum allocation decisions expected at WRC-19.</p> | <ul style="list-style-type: none"> • 2degrees supports MBIE’s participation in the ITU IMT-2020 activities. We support increased resources to participate in IMT-2020 activities given the importance of IMT-2020 to New Zealand economy and competitiveness. • 2degrees also encourages that MBIE give equal or greater focus in rolling out these bands in New Zealand – success depends on successful implementation at the domestic level. |
| <p>RSM will work in the replanning of the additional IMT allocations in the C-band (3.4 – 3.6 GHz). RSM will engage in the international regulatory developments in the L-band (1427-1518 MHz) and the UHF 600 MHz bands in order to assess future options for the New Zealand market.</p> | <ul style="list-style-type: none"> • In the future, bands above 6GHz are likely to be targets for new IMT identification, for example WRC19 agenda item 1.13 is tasked to identify frequency bands above 24 GHz for the development of IMT-2020 (5G). This suggests that these bands are likely to be last few bands below 6GHz and will be crucial for the delivery of mobile services in New Zealand. • Given the importance of these bands for carrier aggregation to deliver high bandwidth 5G services, any significant imbalance in this spectrum will translate to significant competitive disadvantage over time. • 2degrees encourages MBIE to revert to its usual practice of consulting all affected parties (both current and future). • 2degrees wants to participate in all aspects of reallocation of the C-band (3.4GHz and-3.6GHz). |
| <p>RSM will monitor the international developments on authorisation models for spectrum sharing. RSM does not consider necessary the implementation of sharing mechanisms in the medium term, taking into account New Zealand’s levels of spectrum supply relative to national spectrum demand.</p> | <ul style="list-style-type: none"> • 2degrees supports MBIE adopting new and innovative spectrum allocation mechanisms. These new shared access mechanisms provide a way to get higher utilisation out of existing and new spectrum. • We support MBIE’s position that it should monitor the developments in other countries and before determining whether implementation of such sharing mechanisms are necessary in New Zealand. While shared access as a concept is beneficial the utility that can be extracted will depend on the actual implementation and interference and competition issues that arise. For example, the rules FCC has announced for the 3.5GHz band is a balance between encouraging local mobile operators and unlicensed users to invest in the spectrum. • The final implementation of shared access will be shaped by local requirements. MBIE should therefore ensure learnings from overseas applications are applied in the New Zealand context if it decides to implement a shared access regime in future. • As submitted in 2degrees’ submission on the Radiocommunications Act, current legislation is ill-equipped to deal with potential issues of shared access and should be addressed first. |

|  | 2degrees comments |
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| <p>RSM will review the feasibility of additional spectrum for IMT carriers subject to international harmonization outcomes, in the L, S and C bands.</p> | <ul style="list-style-type: none"> • These bands are critical to New Zealand achieving the future vision for IMT where data rates in excess of 1Gbps will be delivered. We encourage MBIE to ensure New Zealand operators are well equipped to deliver this and spectrum does not become a barrier. • All parties affected (both current and future) by these spectrum bands should be consulted in the reallocation of these bands for IMT allocation. |
| <p>RSM will monitor the developments on the ongoing international review of the UHF band, especially in relation to emerging proposals for IMT use. Should these proposals materialize, RSM will need to review the impact on the use of wireless microphones sharing the UHF band with DTT</p> | <ul style="list-style-type: none"> • 2degrees supports the 600MHz band being made available to IMT use. • We do not support shared access to this band. We believe that the dynamic spectrum sharing technologies are not mature enough to share spectrum. Further the Radiocommunications Act is not capable of addressing interference scenarios that raise from such sharing scenario. |
| <p>RSM will implement any Cabinet decisions on a Whole of Government Radio Network for PPDR.</p> | <ul style="list-style-type: none"> • To provide a high availability, reliable network the PPDR network is likely to be best served by those frequencies currently used for TETRA and P25 networks • Where possible, to maximize public benefits such networks should avoid dedicating high demand NZ/IMT designated spectrum. |
| <p>RSM will engage in the international studies on narrowband and broadband machine communications for IoT under the agenda issue set for WRC-19. RSM has temporarily reserved the band 5.875 – 5.925 GHz, subject to the international studies and WRC-19 decisions.</p> | <ul style="list-style-type: none"> • 2degrees support MBIE’s effort to follow the development of M2M and IoT development. • We support reservation of parts of the 5GHz band so long as it does not prevent trialing and deployments of newer technologies in 5GHz |
| <p>RSM will review the outcomes of international decisions in the L band (1427 -1518 MHz) for IMT, with a view to develop options for incumbent fixed links services should this allocation change.</p> | <ul style="list-style-type: none"> • The L band represents another key component of delivering the future vision for IMT-2020. • As we stated earlier we believe all parties affected (both current and future) by these spectrum bands should be consulted in the reallocation of these bands for IMT allocation. |