28 April 2018

TE HUARAHI TIKA
TRUST

Hon. Clare Curran
Minister for Minister of Broadcasting, Communications, and Digital Media
New Zealand Government
Wellington

Email: clare.curran@parliament.govt.nz

E te Minita, tēnā koe
i ngā tini āhuatanga o te wā

"Preparing for 5G in NZ"

Te Huarahi Tika was incorporated as a charitable trust in 2000 to provide the Māori partner a right of purchase over the third generation spectrum (3G) radio frequency being auctioned by the Crown at that time. The terms of purchase were negotiated between the Crown and the Trust.

The purpose of Te Huarahi Tika is to increase the participation of Māori in the knowledge economy, in particular, the information and telecommunications sectors in Aotearoa. The Trust, whose members broadly represent Māori, was established so that it could engage a commercial partner to develop the 3G spectrum allocated to Māori.

Hautaki Limited is the trustee of Te Huarahi Tika Trust's commercial arm, Hautaki Trust. The commercial objectives of Hautaki Trust are to meet and fund the purposes of Te Huarahi Tika Trust. In December 2001, Hautaki Limited entered into a commercial relationship with Econet Wireless Limited. Hautaki Trust owned 30% of Econet Wireless NZ Ltd (EWNZ) with Econet Wireless Ltd holding 63%. These initial relationships were the precursor to the development, launch and phenomenal growth of the 2 Degrees mobile network.

In 2009, 2Degrees launched with pricing that halved the cost of calling and text overnight. Three years later, more than a million New Zealanders joined the company as it followed lower pricing with other new benefits like bundles and the ability to keep your data.

This stirred a competitive response from the incumbent mobile operators, which has been great for consumers:

- The cost for a low user of mobile services is 47% below the OECD average and for higher users it's 27% below the OECD average.
- The positive deflationary impact of 2Degrees entry was described by the Reserve Bank as 'the 2Degrees effect'.
- Customers can now buy data by the minute, rather than by the megabyte, which no one understands anyway, and use WIFI networks for calling.
- Investment in new generations of mobile technology is world class – the providers all have 4G networks and are rolling out 4.5G networks – without placing a burden on taxpayer funds.

New Zealand's mobile market continues to develop.

- All three operators are investing in 'Internet of Things' networks and looking at fixed wireless technology to best meet the needs of consumers.
- All three operators are all planning for 5G.
- As a late entrant, 2Degrees is an active wholesaler, enabling new mobile entrants via its network.
- 2Degrees supported the launch of Warehouse Mobile, which offers a truly different mobile offering and are in commercial negotiations with other providers who plan to deliver new mobile services.

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These developments were made possible by sound policy, supported by regulation that constrains the ability for incumbents to dominate the market.

The preceding comments have been made to provide a background to the purpose of this letter which is to engage with the Government in its discussion on 'Preparing for 5G in NZ'. 5G spectrum brings together a number of technologies; better, faster, transformative technologies. It provides access to different bands that we could not previously utilise. Hautaki is strongly supportive of an outcome that promotes competitive outcomes and spectrum parity in the market for services.

Last year, with the full support of Te Huarahi Tika Trust, Hautaki transferred its financial interests in 2Degrees to Trilogy International, the majority shareholder in 2Degrees. As one of the largest Māori investors in telecommunications, Hautaki remains well placed to comment on future spectrum allocation.

While Hautaki is prepared to share its views with the Minister and the Ministry for Business, Innovation and Employment on this matter, this must not be seen as a substitute for discussions the Crown should have with Māori directly.

Hautaki is concerned that the spectrum be allocated in a fair and equitable way that recognises Māori interests, ensures efficiency of use of the resource and maximises useful services while reducing cost for consumers.

Hautaki does not agree that an auction is the best mechanism to deploy spectrum in the New Zealand market, there are a number of issues not the least of which include the risks that:

a) we repeat the Australian experience with unsold 700Mhz spectrum and failure to reach the Government's revenue targets, and
b) anti-competitive behaviours where control of spectrum could be used as a mechanism to close down competition rather than generate growth across the industry.

Our position is that a shared spectrum model with direct negotiation and allocation to those with capacity and experience in service provision would be a fair and robust process to manage competition, pricing and coverage concerns.

The three mobile providers, Vodafone, 2Degrees and Spark have jointly invested $2B in developing infrastructure to support the three networks. We encourage the three providers to explore opportunities to collaborate in arrangements for 5G network infrastructure. Building on existing infrastructure will facilitate the roll out of 5G without undue delays.

Hautaki advocates for arrangements that encourage free competition in the retail market.

Submission

Hautaki's submission is based on four concepts:

1. Recognising Māori management rights
2. Shared spectrum models
3. Efficiency of allocation
4. Responsible usage

These concepts are expanded on in the following statement.

1. An allocation of 5G spectrum management rights should be made to Māori interests before going to market. The spectrum allocation needs to consider Māori aspirations and the established reputation of Te Huarahi Tika group in delivering significant benefits to all New Zealanders through spectrum allocation. Hautaki plans to support Māori initiatives to trial 5G; therefore, an allocation for that purpose should be included in the government's planning;

2. Rather than an auction process, a shared spectrum model should be designed with the newly released 5G spectrum being licensed to commercial operators working collectively:
   - a strategy for co-location on towers, new and existing by telecommunications companies be a requirement of spectrum allocation;
   - arrangements for the sharing of fibre and other infrastructure by commercial operators be encouraged with advice, resourcing and a regulatory framework that supports the connectivity of the nation.

   The appendix provides a brief snapshot of shared spectrum standards, implementations and innovations internationally.

3. Spectrum should be allocated to those who currently develop and provide services to consumers. The 5Gz spectrum must be allocated for efficient usage. Commercial operators of the spectrum must not be able to accumulate spectrum or use spectrum in a way disadvantages other operators or users of the spectrum.

4. The 5G spectrum must be allocated in a way that is socially and environmentally responsible. A cohesive plan for the development of national mobile infrastructure that minimises the number of towers, minimises environmental impacts and maximises outcomes for consumers must be developed by the industry with the support of the Crown and Māori.
   - The placement of the new cell phone towers should include public consultation within the community;
   - Plans should ensure that emergency calls have high availability and voice users have quality of service above broadband services.

Te Huarahi Tika Trust recognises that the future performance of the nation and the wellbeing of its people is inextricably linked to our participation in the global digital world. The future leaders of this Country, currently completing their education in primary and secondary education, will expect our generation to have provided a foundation through infrastructure and a regulatory framework that they can use to catapult us to a position of cultural, educational, social and economic excellence.

A new multi-talented team of Te Huarahi Tika trustees complements the experience of our Hautaki directors. We are well placed to provide advice and to facilitate conversations that best benefits all New Zealanders. We are willing to work with government to lead further discussions of the 5G spectrum with Māori, with industry and with non-industry operators. With that in mind we would welcome the opportunity to meet with you to discuss this submission in more detail.

Finally, Te Huarahi Tika Trust is a member of the Māori Spectrum Coalition and has an interest in Māori exercising their management rights over all radio spectrum frequencies, not just the 5G. The Trust urges the Crown to re-enter negotiations with the WAI2224 claimants to address this matter once and for all thus preventing the need for ongoing discussions and litigation at substantial cost to Māori and the nation.

Ngā mihi

Nā
Daphne Luke
Chairperson
Te Huarahi Tika Trust

Copy: Hon. Nanaia Mahuta, Minister for Māori Development
Hon. Willie Jackson Minister of Employment Associate Minister for Māori Development.
MBIE 'Preparing for 5G' consultation team

APPENDIX : Shared Spectrum Synopsis

Introduction

The following synopsis provides a brief snapshot of Share Spectrum standards, implementations and innovations in the United States and the European Union. The purpose of this synopsis is to encourage an innovative approach to New Zealand's up and coming 5G spectrum allocation.

1. Shared Spectrum Standards

United States - Citizens Band Radio Service (CBRS)

https://en.wikipedia.org/wiki/Citizens_Broadband_Radio_Service

Citizens Broadband Radio Service (CBRS)[1] is a 150 MHz broadcast band of the 3.5 GHz band (3550MHz to 3700MHz) historically used by the United States government for radar systems.[2] In 2017, the Federal Communications Commission (FCC) completed a process begun in 2012 to establish rules for commercial use of this band. Wireless carriers using CBRS are expected to be able to deploy 5G mobile networks quickly and easily, without having to acquire spectrum licenses.

European Union - Licensed Shared Access (LSA)

http://www.nera.com/publications/archive/2016/mechanisms-to-incentivize-shared-use-of-spectrum.html

One of the most promising approaches is Licensed-Shared Access (LSA). In an LSA arrangement, the incumbent grants access to spectrum in its band to a secondary user on an exclusive basis. LSA has the benefit of being relatively simple to implement, as access to spectrum is only shared between two parties, while also providing mobile operators with certainty over availability of spectrum capacity.

ETSI releases specifications for Licensed Shared Access (LSA)

http://www.etsi.org/news-events/news/1181-2017-04-news-etsi-releases-specifications-for-licensed-shared-access

ETSI produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, broadcast and Internet technologies. The ETSI Technical Committee for Reconfigurable Radio Systems (TC RRS) has announced the completion of the specification for the support of Licensed Shared Access (LSA). This provides a means to enable spectrum sharing coordination between LSA licensees and existing spectrum licensees, thereby ensuring Quality of Service (QoS).

2. Shared Spectrum Implementations

United States - FCC Shared Spectrum and the 3.5 GHz Band

http://www.federatedwireless.com/shared-spectrum-and-the-3-5-ghz-band/

For those unaware, in April 2015 the Federal Communications Commission adopted rules for the 3.5 GHz band (or the Citizen's Broadband Radio Service) unlocking 150 MHz of spectrum for shared use by commercial entities. The FCC's action opened a new chapter in the regulation and administration of our nation's radio spectrum. I believe it will pave the way toward future 5G applications – a massive increase the reach, capacity, and resiliency of wireless networks and in the rollout of new industrial applications, enabling the Smart City and the Internet of Everything.

Shared use of spectrum is essential, but challenges with implementation remain, comments European Commission ahead of DSA Global Summit 2018

https://www.realwire.com/releases/Shared-use-of-spectrum-is-essential-challenges-with-implementation-remain

London, United Kingdom, 17 April 2018: Speaking ahead of the Dynamic Spectrum Alliance (DSA) Global Summit 2018, which will take place in London from 1-3 May 2018, the European Commission's Head of Unit for Radio Spectrum Policy has urged how essential the shared use of spectrum is but cautioned that challenges with implementation remain.

France - Mobile spectrum sharing pilot begins in France

https://www.computerweekly.com/news/4500270132/Mobile-spectrum-sharing-pilot-begins-in-France

An extensive pilot of licensed shared access (LSA) spectrum sharing technology has begun in Paris, supported by Ericsson, local startup Red Technologies, mobile chip supplier Qualcomm and the French government.

The pilot programme will see the Ministère de la Défense – the French equivalent of the UK's Ministry of Defence – share spectrum that it currently holds in the 2.3 to 2.4GHz band using Ericsson's radio access network.

Italy - Licensed Shared Access (LSA) Pilot

http://www.sviluppoeconomico.gov.it/index.php/en/news/2033594-licensed-shared-access-lsa-pilot

The Italian Ministry of Economic Development and the Joint Research Centre of the European Commission have started a pilot project on the sharing of radio spectrum at 2.3 GHz band, based on the Licensed Shared Access (LSA).

The pilot is developed under the technical coordination of Fondazione Ugo Bordoni and involves industrial partners from numerous European countries: PosteMobile (Italy), Qualcomm Technologies, Inc. (Italy), Nokia Networks (Italy/Finland), Cumucore (Finland) Fairspectrum (Finland) and Red Technologies (France).

Europe - LSA Implementation

https://www.cept.org/ecc/topics/lsa-implementation

"A regulatory approach aiming to facilitate the introduction of radio communication systems operated by a limited number of licensees under an individual licensing regime in a frequency band already assigned or expected to be assigned to one or more incumbent users.

Under the Licensed Shared Access (LSA) approach, the additional users are authorised to use the spectrum (or part of the spectrum) in accordance with sharing rules included in their rights of use of spectrum, thereby allowing all the authorized users, including incumbents, to provide a certain Quality of Service (QoS)".

3. Shared Spectrum Innovations

5G Spectrum Sharing brings new innovation

https://www.qualcomm.com/invention/technologies/5g-nr/spectrum-sharing

Access to shared and unlicensed spectrum will extend 5G in multiple dimensions - such as more capacity, higher spectrum utilization, new deployment scenarios. It will benefit mobile operators with licensed spectrum but also opens the doors to those without licensed spectrum – such as cable operators, enterprise or IoT verticals – to take advantage of the 5G New Radio (5G NR) family of technologies.

5G NR is designed to natively support all spectrum types and, through forward compatibility, has the flexibility to take advantage of new spectrum sharing paradigms. This creates opportunities for new innovation to take spectrum sharing to the next level in 5G.

What is CBRS Shared Spectrum for in-building small cell wireless?

https://www.thinksmallcell.com/LTE/what-is-cbrs-shared-spectrum-for-in-building-small-cell-wireless.html

What's different is the way that the spectrum is assigned to each user. This isn't sold to operators in large blocks covering wide geographic areas nor a completely unlicensed free-for-all (such as Wi-Fi). Instead, use within each building is individually requested and assigned on a case-by-case basis. Where it is no longer required, it is returned for use by others.

Shared Spectrum Company

http://www.sharedspectrum.com/

The ever-increasing demand for wireless bandwidth, combined with the artificial constraints placed on it by traditional regulatory approaches, have made RF spectrum an incredibly scarce and expensive resource.

Shared Spectrum Company (SSC) is unlocking the full potential of this resource with its pioneering and innovative cognitive radio technologies that eliminate artificial barriers and support more efficient use of spectrum. Core among these technologies is SSC's Dynamic Spectrum Access (DSA) solution.

The FCC Should Use Blockchain to Manage Wireless Spectrum

https://www.wired.com/story/the-fcc-should-use-blockchain-to-manage-wireless-spectrum/

Instead of having a centralized database to support shared access in specific spectrum bands, innovators should explore the use of blockchain as a lower-cost alternative. If the effort succeeds, the benefits could be considerable: The system could reduce the administrative expense of allocating spectrum and increase efficiency by enabling demand-matching spectrum sharing and by lowering transaction costs.

Even better, the public quality of the information on the blockchain could expose patterns in use and inspire new technical innovation in the process. Plus, new models for short-term leasing of our airwaves could emerge and expand the range of wireless uses.