

Competition in the fixed and mobile telecommunications markets

REPORT PREPARED FOR BLUE REACH SERVICES LTD

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Executive Summary

This report draws on international material along with analysis of the state of competition in the New Zealand fixed and mobile telecommunications markets to draw conclusions on whether these markets are competitive and contestable. It examines whether and why there are barriers to entry and expansion in the fixed and mobile retail markets, and how the proposed Vodafone-Sky merger would affect such barriers.

This report finds that the merger may have very significant detrimental impacts not only in the retail markets for fixed broadband and mobile services, but also in the wholesale markets for the supply of broadband services at fixed locations and for mobile virtual network operator (MVNO) services.

By restricting the contestability of a significant portion of residential customers (ie, those who purchase Sky premium content) the merger will reduce the ability of many Telecommunications Service Providers (TSPs) to expand and achieve scale efficiencies. This will itself reduce the extent of retail competition by weakening the ability of small and medium sized TSPs to compete effectively with large TSPs. However, it also jeopardises the development of competition in the wholesale fixed and mobile markets.

Blue Reach plans to deploy a 5G mobile network as an open access wholesale-only service provider, supplying wholesale 4G fixed wireless services in the first instance. Its fixed wireless offerings will also be focussed on regional areas where consumers are underserved with regard to the broadband speeds available over the copper network.

Blue Reach's innovative business model contrasts hugely with that of existing vertically integrated mobile networks, providing open access wholesale fixed wireless services and a market-led alternative to MVNO regulation. It has potential to be very disruptive in both the mobile and fixed telecommunications markets in New Zealand, providing very significant consumer benefits and contributing to broader economic benefits.

Target wholesale customers of the Blue Reach network would be TSPs who do not own their own mobile network. That is, TSPs other than Vodafone, Spark and 2degrees as those networks would presumably use their own networks to self-supply fixed wireless services. As a result, the ability of a new open access fixed wireless network, such as Blue Reach, to gain sufficient scale will be dependent on the viability of small to medium size TSPs. If the merger results in those types of TSPs failing to expand by effectively restricting the pool of contestable retail customers, then this would jeopardise the viability of the Blue Reach business model. This would put at risk the competition benefits in the wholesale market for fixed broadband and the wholesale MVNO market as well as in the corresponding downstream retail markets.

Wholesale markets for fixed broadband services

This report identifies a wholesale market for broadband services as being relevant for the purposes of examining competitive effects of the proposed merger. There are a number of ways in which entry by a mobile network/fixed wireless operator such as Blue Reach would significantly improve market outcomes in the wholesale broadband market:

- There will be a significant proportion of New Zealand where Chorus is essentially a monopolistic provider of wholesale fixed broadband services over the long term. While its UFB products and pricing through to 2020 have been negotiated through a competitive tendering process, after 2020 it will be subject to a utility style regulatory regime. That regime is effective at restricting monopoly profits, but has significant shortcomings in incentivising efficiency or innovation. The presence of an alternative wholesale broadband platform in the form of wholesale fixed wireless provided over 5G could provide a competitive discipline and incentives for continued investment in service enhancements and innovation.
- There are currently limited incentives for existing mobile networks to provide wholesale fixed wireless services. This is evident from the fact that these services are currently only offered where required by Rural Broadband Initiative (RBI) contractual obligations (ie, wholesale fixed wireless services are only provided by Vodafone in RBI coverage areas). Being an open access wholesale-only service provider, the Blue Reach model has the potential to be disruptive in the wholesale fixed network service markets with benefits flowing directly to downstream retail markets.
- With improved rural connectivity being an important enabler of growth in primary sector exports as well as providing support to rural communities through improved health and education service delivery, when there is a major challenge in getting networks implemented in the regions increased investment and competition in these areas is highly desirable.

Retail market for the supply of residential broadband and telephony services at fixed locations

This report finds that the retail residential broadband market is highly concentrated. For example, the 3-firm concentration ratio (the sum of market shares for the three largest firms) for fixed broadband in NZ is 92%¹, as compared with 69% in Australia² and 74% in the UK³. Market shares estimates published by the Commerce Commission indicate that the HHI is above 3370. This is only slightly below the HHI in the mobile prepay market and is

¹ Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 22.

² ACCC (February 2016), *Competition in the Australian telecommunications sector*, Figure 2.6 page 24.

³ Ofcom (4 August 2016), *The Communications Market Report*, p. 151.

substantially above the threshold of 2,500 that is typically used to identify a highly concentrated market.⁴

Market outcomes indicate competition concerns - for example, a sustained price differential between the largest TSPs and smaller TSPs. There are a number of barriers to entry and expansion, which would be heightened were the merger to go ahead.

These conclusions stand in contrast to the NERA report prepared for Vodafone and Sky, which states:⁵

ii. The evidence shows New Zealand telecommunications markets are competitive and contestable: fixed access is purchased on a variable basis from the structurally separated Chorus, there are numerous competitors (some of which are strong players, such as Spark), prices are falling (across fixed-line calling, fixed broadband and mobile calling and data), and fixed broadband speeds and data allowances are rising;⁶ and

iii. There are no impediments to expansion ...

A key barrier to entry and expansion is achieving minimum efficient scale in the context of high fixed costs. The prevalence of a large number of very small ISPs, and a small number of very large ISPs and few in between would seem to indicate that ISPs are able to operate effectively at a very small scale by serving a particular niche (eg, a small geographic area), but that expanding to become a mainstream national TSPs is very challenging. To do so, a TSP must make very significant marketing investments to develop a reputable brand with widespread customer awareness. Spark's advertising, promotions and communications expenditure was \$78m in 2015 and \$77m in 2016. Competing with established brands where such large investments are being made would require very significant scale.

Bundling has become an increasingly prominent feature of the New Zealand telecommunications markets. This is the case for both residential and business consumers. Consumer preference for bundled offers highlights the importance of non-discriminatory open access wholesale service availability. While this has become a central part of regulatory policy in New Zealand for fixed services, wholesale mobile offerings have floundered. Blue Reach has advised that its network is to be an open access mobile and fixed wireless network, with Blue Reach not competing in the downstream markets with its wholesale customers. The availability of open access wholesale mobile services would facilitate competition in the retail broadband market through strengthening the ability of TSPs that do not own a mobile network to provide bundles of fixed and mobile services.

⁴ See for example: United States Department of Justice and the Federal Trade Commission (2010), *Horizontal Merger Guidelines*, Section 5.3.

⁵ NERA – report for Vodafone and Sky (11 September 2016) at para 10B

⁶ See Commerce Commission's 2015 Annual Telecommunications Monitoring Report.

Wholesale market for the supply of MVNO services

MVNO (mobile virtual network operator) services in New Zealand account for less than 0.5% of mobile connections, in comparison to many other countries where MVNOs have become a significant feature of retail mobile competition. In Australia MVNOs hold a 10% share of connections and in the UK around 16% of mobile connections are supplied by MVNOs.

As the prevalence of bundling increases, it becomes even more important that effective wholesale mobile service offerings be made available. This not only allows for increased competition for retail mobile services but also for fixed network service providers to replicate service bundles and remain relevant. Also, as the prevalence of bundling increases, it is likely that incentives for the three vertically integrated mobile network operators to offer viable MVNO services reduce. This is because in acquiring a wholesale mobile connection, the vertically integrated MNO risks losing to the MVNO customer not only the retail mobile margin that it could previously have earned but also the margin that it would have earned on the full suite of services in the bundle.

Supply of MVNO services effectively requires the deployment of a mobile network. There are a number of barriers to entry and expansion, which limits the number of mobile network owners (MNOs) and consequently the number of suppliers of wholesale MVNO services. However international evidence as well as changing economics of mobile network deployment support the case for a viable fourth mobile network in New Zealand (at least under the counterfactual where the merger does not occur).

Four-player mobile network competition is common internationally, with half of all OECD countries having four or more competing mobile networks. This outcome is not limited to countries with a large population. For example, competition between four networks occurs in Finland, Iceland, Luxembourg, and Slovenia, which along with New Zealand are among the ten smallest OECD countries, as measured by population size.

Regulators, competition authorities and policy makers internationally including in Australia, the EU and the US, have expressed strong support for the presence of four or more mobile networks to deliver benefits in the form of price reductions, accelerating network investment and increased innovation. In a recent study the UK regulator, Ofcom, found that an increase in the number of mobile networks reduces prices by 7.3% to 9.2%.

The benefit of entry by disruptive firms, like Blue Reach (which is a successor to CallPlus, another disruptive firm) has also been of interest to regulators and policy-makers internationally. The Ofcom study for example, pointed out that disruption, or even the threat of disruption, can disturb existing market dynamics, promoting further competitive rivalry to the benefit of consumers. Ofcom also found that where a disruptive player is

present, prices are lower by 10.7%-12.4%. This brings the total effect of disruptive new entry to 17.2%-20.5%.

5G technology, which is likely to be commercially deployed internationally in the next few years, profoundly changes the underlying economics of mobile network deployment and improves market entry conditions. In particular, a deployment of a 4G/5G network differs from older technologies in that:

- It is IP-only which avoids significant complexities and costs of designing, installing and operating 2G/3G networks;
- Increasingly aggressive competition between equipment vendors has reduced prices to fraction of what was previously charged, and has also brought more innovation and a greater willingness to provide customised solutions and applications, even on a relatively small scale;
- The greater capacity and improved latency with the capability of providing “HD voice” services makes the use of fixed wireless over 4G and 5G networks a much more attractive substitute for fixed broadband and voice than was previously the case with 2G or 3G networks;
- The deployment of 5G networks, in particular, involves the use of a large number of small cellsites, rather than a small number of large sites as was typical of earlier network deployments. Although more sites are required for 5G, the cost of each site is likely to be low – and the overall network investment cost much lower – because existing infrastructure can be used such as power poles and multi-story buildings, rather than requiring purpose-built cell towers; and
- There are innovative new 5G technologies still in the development phase which could allow increased coverage without additional cell sites and improve the user experience.

Combined, the above factors appear to enhance the prospects of new entry and viability of a fourth mobile network. At the same time, the broader range of applications enabled by 4G and 5G networks would indicate that revenue opportunities will continue to grow.

Blue Reach’s innovative business model contrasts hugely with that of existing vertically integrated mobile networks, providing a market-led alternative to MVNO regulation. It has potential to be very disruptive in both the mobile and fixed telecommunications markets in New Zealand, providing very significant consumer benefits and contributing to broader economic benefits.

The barriers to entry likely to be heightened by the proposed Vodafone-Sky merger may constrain the entry of a fourth network, and result in the loss of these benefits.

Retail market for the supply of mobile services

Entry by a third network in 2009, in the form of 2degrees, has brought significant benefits to consumers, particularly in the residential/prepay segment of the mobile market. However, its growth in share of customers ceased completely from 2012/13, and the extent of concentration in the business market segment still more closely resembles a duopoly than three-player network competition. This, together with the observation that prices in NZ compare least well internationally for large users and data-only plans, indicates that there could be significant benefits that could be achieved through intensified competition, particularly for business customers. In the counterfactual, this could occur through: (1) further expansion by 2degrees into the business market; and (2) entry and expansion by other TSPs into all segments of the retail mobile market using Blue Reach open access MVNO services.

On the assumptions that the merger will lead to reduced scale for Vodafone's rival TSPs because they are unable to effectively contest the customer segment that purchases Sky premium content and that these customers will tend to have higher than average ARPU, it is quite possible (or even highly probable) that a number of small and medium-sized TSPs will no longer achieve minimum efficient scale. This in turn reduces the potential scale that Blue Reach can achieve and limits its ability to achieve a minimum efficient scale.

As a result, the proposed Sky-Vodafone merger has the potential to restrict the ability for a fourth mobile network such as Blue Reach to viably compete, and risks substantially lessening wholesale MVNO competition (and benefits for downstream retail competition) as compared with the counterfactual where the merger does not occur.

Mobile network viability impacts are not limited to Blue Reach/the fourth network, but could also jeopardise the ability of 2degrees to gain sufficient scale to be financially sustainable. The loss made by 2degrees as disclosed in its 2015 financial statements indicates that it has not yet reached minimum efficient scale. On the assumption that the merger will reduce the portion of the residential market segment that is contestable, this will increase the difficulty in achieving minimum efficient scale. This puts at risk both the strengthening of competition in the residential market since 2degrees entry as well as the further competition benefits that could occur if 2degrees were to expand further into the business market segment.

1 Introduction

I have been asked by Blue Reach to provide a report on:

1. Whether or not New Zealand fixed and mobile telecommunications markets are competitive and contestable (this is discussed at Para 10B of NERA's report on behalf of the applicants); and
2. Whether and why there are barriers to entry and expansion in the fixed and mobile retail markets, and how the merger would affect such barriers (see Para 37 of the letter of unresolved issues).

In the limited time available and as others are submitting upon, and providing expert reports on, related issues, I have only been instructed to address the above issues.

Issue 1: Are the New Zealand telecommunications markets sufficiently competitive?

The NERA report on behalf of the applicants states at Para 10B:

ii. The evidence shows New Zealand telecommunications markets are competitive and contestable: fixed access is purchased on a variable basis from the structurally separated Chorus, there are numerous competitors (some of which are strong players, such as Spark), prices are falling (across fixed-line calling, fixed broadband and mobile calling and data), and fixed broadband speeds and data allowances are rising;⁷ and

iii. There are no impediments to expansion, and the evidence of Plum and Castalia that bundling would raise switching costs is weak (we return to this below).

Additionally, over two pages in its 11 September submissions, Vodafone submits that fixed and mobile markets are competitive. For example:

Telecommunications markets are highly competitive

4.2 It is commonly accepted that the New Zealand telecommunications markets are highly competitive, both in respect of broadband and mobile....

4.3 In addition, the third party submissions generally acknowledge that the telecommunications markets are highly competitive...

4.4 The competitiveness of the market is largely attributable to the low barriers to entry and expansion, including (in the case of broadband) due to structural separation in the fixed market. This has manifested in an increasing number of operators competing on a number of differentiating factors. The intensity of

⁷ See Commerce Commission's 2015 Annual Telecommunications Monitoring Report.

competition has driven innovation in the individual services and bundles offered to consumers, and this dimension is expected to continue. The Combined Entity will continue to face strong competition from a number of large, well-resourced competitors...

I note that Vodafone (and NERA) have not dealt with the following submissions when submitting as to the claimed high level of competition in mobile and fixed markets:

1. Trustpower's submission dated 12 August at page 17 through to page 22 that the mobile markets have substantially reduced competition; and
2. Blue Reach's submission of the same date at page 12 through to page 19 on the same point, and dealing with fixed services as well.

Issue 2: Impact on competition if Vodafone's rival mobile and fixed line operators' scale reduces

In relation to fixed line broadband TSPs, the Letter of Unresolved Issues (LOUI) states:

37. We are concerned that, due to the loss of customers, rival broadband suppliers could lose scale in the factual and become less competitively effective. Although the supply of broadband has a large component of variable costs, there are some fixed costs. For example, some broadband suppliers make fixed cost investments including active network assets within exchanges and through owning core network assets (ie, backhaul networks). There are also fixed costs associated with marketing and support staff.

38. We are concerned that smaller broadband suppliers who have invested in those assets (and those that are planning to) may not be able to achieve scale in the factual to recoup their investment. Those suppliers may then leave the market or become forced to retrench. Rivals may find it difficult to grow again if they are unable to match the merged entity's bundled offerings. Although customers may initially benefit from the bundle offers, we are concerned that once those rivals are at a reduced scale, the merged entity may be able to raise prices for broadband services relative to the counterfactual.

I will address in my report the effect on those suppliers, and upon the market (including potential new entrants), if there is a loss of customers. I do not address in detail the questions around whether or not the merger will lead to loss of customers: I deal only with the market effects of that loss.

I also deal with the effects on the assumption that the loss of customers will include a substantial proportion of high ARPU customers as discussed in the Covec report of 30

September.⁸ The LOUI states in this regard (in a passage applicable to mobile as well as fixed):

41. As noted earlier, we understand that the subscribers that are most likely to switch are high ARPU customers, which means the loss of subscribers will have a disproportionate impact on the finances of those competitors that lose them. We are concerned that this may have a material impact on the competitiveness of rival TSPs.

In relation to mobile services, the LOUI states (emphasis added):

39. We are also concerned that, due to the loss of customers, rival mobile suppliers could also lose or fail to achieve scale in the factual and become less competitively effective. We recognise that the proportion of mobile accounts that are affected by the merged entity's conduct at present may be lower than the comparable number for broadband accounts. However, we continue to have concerns because:

39.1 there has been a shift to consumption of video content on mobile which (as noted earlier) increases the potential for the merged entity to foreclose competitors through bundling content with mobile services; and

39.2 fixed costs comprise a large proportion of the costs associated with offering a mobile service, which means a loss of subscribers is more likely to affect scale economies.

Again I will deal with the effects of the loss of customers, taking into account also the point at Para 41 of the LOUI that the lost customers would include a substantial proportion of high ARPU customers.

This report examines these matters using publicly available data, including from the Commerce Commission's Annual Telecommunications Monitoring Reports and underlying industry data. It also draws on information provided by Blue Reach, and where it is confidential it has been marked Commercial-in-Confidence [C-I-C].

This report is structured as follows:

- Section 2 examines the extent of competition and the potential for new entry in the markets for the supply of telecommunications services at fixed locations. It also looks at the effect on competition that a loss of scale could have for firms competing in those markets (and for potential new entrants); and
- Section 3 carries out similar analysis in respect of mobile telecommunications services.

⁸ Covec (September 2016), *Review of New Material on Sky-Vodafone Proposal*

In the LOUI, the Commission identifies two relevant telecommunications markets as being: (1) the national retail market for the provision of residential fixed-line broadband services; and (2) the national retail market for the provision of mobile services. As is discussed below, there is also potential for entry barriers and the extent of competition to be affected in the wholesale markets. As a result, the following sections examine the wholesale market for the provision of fixed-line broadband services and the wholesale market for the provision of Mobile Virtual Network Operator (MVNO) services, as well as the retail markets identified by the Commission.

2 Competition for telecommunications services provided at fixed locations

This section first examines the state of competition in the wholesale markets for the provision of broadband services at fixed locations (section 2.1) and then discusses the retail market in which broadband services are provided to residential consumers (section 2.2).

2.1 Wholesale broadband services provided at fixed locations

2.1.1 Market definition

At a product level, the relevant market would likely include all types of fixed networks currently provided (copper⁹, fibre and HFC) as well as fixed wireless. The Commerce Commission recognises in its 2015 Annual Telecommunications Monitoring Report that fixed wireless technologies are now offering a real substitute for copper. In particular, it states (p.10) that:

Mobile operators continued their roll-out of 4G mobile technology, with newly acquired 700MHz spectrum giving them more options to improve the performance of mobile broadband. By the end of 2015, retailers were able to start offering 4G fixed wireless broadband services that were comparable, if not better, in price and performance to ADSL copper broadband services.

Looking forward, increased speeds achievable over 5G seem likely to further strengthen the suitability for fixed wireless as a substitute for fixed broadband networks.

Given the above, the market adopted in this report is defined as the market for the provision of wholesale broadband services provided at fixed locations (including fixed wireless services).

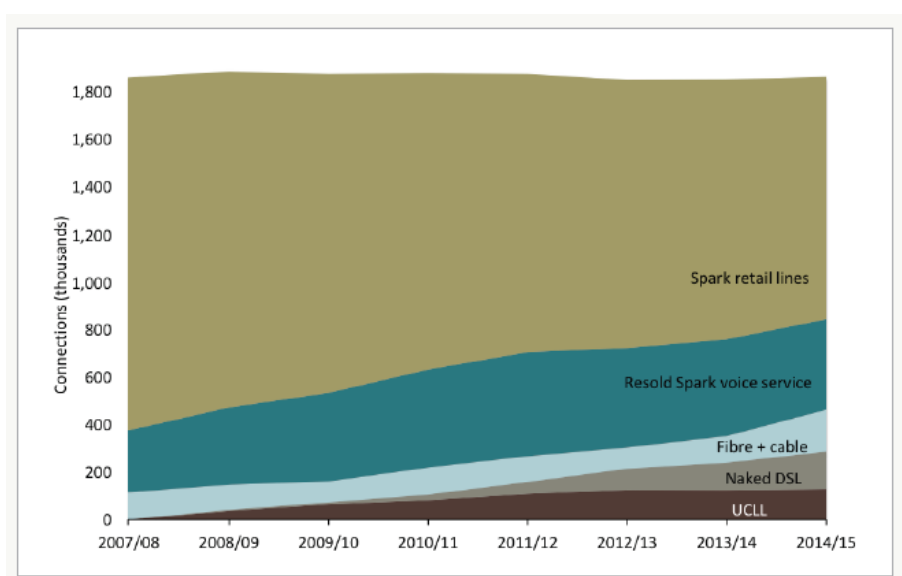
⁹ Over time copper may be less likely to place competitive constraints on alternatives that provide superior alternatives and may no longer form part of this market.

2.1.2 State of competition

Four key wholesale fixed network services currently provided in the wholesale market for broadband services provided at fixed locations are:

1. Unbundled copper local loop (UCLL) service: Provided by Chorus on regulated terms, with uptake generally limited to use by Vodafone and Vocus. The UCLL service is primarily used in urban centres where it is most viable. As is evident from Figure 1, growth in the use of UCLL virtually ceased around the time that the UFB programme commenced.

Figure 1: Spark and alternative fixed line providers



Source: Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 21.

2. Wholesale bitstream: Provided by Chorus on regulated terms, with some limited competitive supply by Vocus using UCLL.
3. Wholesale VDSL: Chorus was required under its separation undertaking to deploy VDSL. Pricing of the service is at the regulated UBA service pricing.
4. Ultra-Fast Broadband (UFB): Wholesale fibre network access provided by Chorus, which is deploying UFB to 830,000 premises. LFC (Local Fibre Company) UFB deployment will bring total UFB coverage to 75%. A further 5% fibre coverage is to be provided through the UFB2 program.

There are other fibre networks in certain geographic areas – for example, those owned by Vector and Citylink.

Self-supply of wholesale fixed network broadband access – that is, provision of retail services by a vertical integrated network owner – also occurs in some areas. For example, in

certain areas of Christchurch and Wellington, Vodafone owns a hybrid-fibre coaxial (HFC) network which it has upgraded to DOCSIS 3.1, providing download speeds up to 1Gbps.¹⁰

Competitive constraints within UFB coverage areas

Connections within the eventual 80% coverage of UFB will in future be provided with fibre broadband speeds, with competition from other networks in some areas. The potential for further fixed network entry (aside from fixed wireless) is likely limited given the high sunk costs involved, particularly as entrants would effectively be competing with a government subsidised network which, in any case, has natural monopoly characteristics in many geographic areas.

Although there are a number of wholesale services offered on regulated terms, for a significant portion of connections Chorus will essentially be a monopoly provider. The competitive tendering process used by Crown Fibre Holdings (CFH) for the UFB program has secured a product set and associated pricing terms that apply until 2020. After that point, it appears likely that a utility-style regulatory model will be applied – for example, as is currently applied for electrical and gas networks.

Utility-style (rate of return) regulation is well-suited to ensuring that only a reasonable return on capital is earned. However, a key difficulty that regulators have in applying rate of return regulation is finding a way to incentivise efficient investment decisions and encourage innovation. Ultimately this is best delivered through competitive constraint from rivals where possible because regulation (whereby a regulator must devise a means for determining what investments are efficient and what level of service quality and product range is optimal) is highly inferior to allowing a competitive market to determine these factors.

Fixed wireless services provide a key means for network competition in future, particularly in the 5G context where high bandwidth and other improvement in service quality means that increasingly comparable services to those available over fibre can be offered.

There are no nationwide wholesale fixed wireless products offered at present. Vodafone limits its wholesale fixed wireless service only to Rural Broadband Initiative (RBI) coverage areas, where it is contractually obliged to provide wholesale service. That it limits the service in this way would seem to indicate that it has no incentive to provide a wholesale fixed wireless service in the absence of a legal or regulatory requirement. Although Spark provides a retail fixed wireless service it does not appear to provide a wholesale equivalent. Similarly, 2 degrees does not appear to provide a wholesale fixed wireless service.

¹⁰ <http://www.stuff.co.nz/business/industries/85548053/Vodafone-offers-gigabit-cable-broadband-in-Wellington-and-Christchurch>

Competition outside of UFB areas

Outside of UFB areas, service is primarily limited to copper DSL services, fixed wireless or satellite. There is a significant opportunity for competitive wireless services over 3G and 4G to provide an efficient means of supplying fast broad band services to regional customers who are underserved, in order to provide a superior alternative to the legacy copper network.

2.1.3 Market entry under the counterfactual

Under the status quo there is potential for entry of one or more new fixed wireless networks. For example, Blue Reach intends to provide LTE fixed wireless services in the near future in a number of urban and regional population centres, focussing initially on areas where a specific need for improved broadband service quality has been identified. At a later date, 5G mobile network deployment by Blue Reach would provide an even higher speed wholesale national fixed wireless service to TSPs as an alternative to the Chorus/LFC fibre products.

Blue Reach is a pure open access wholesale business which is encouraging regional and other businesses to enter the fixed line replacement business by providing open access wholesale fixed wireless (and later mobile) services. [C-I-C

]

The deployment of the Blue Reach fixed wireless network in regional areas provides TSPs with an alternative to the existing Chorus network wholesale services (eg, bitstream). It also provides the ability to deliver far superior service to the copper services that is currently available.

As was highlighted at the TUANZ 2016 Rural Broadband Symposium, high-speed broadband is an essential piece of infrastructure for the economy and “Improved rural connectivity is also a vital part of achieving the government’s ambitious target to double the value of our primary sector exports by 2025.”¹¹ It was also highlighted that high-speed broadband has the potential to support rural communities – for example: “... the potential for digital technology to overhaul the model for delivering rural health, adding up to better care, better outcomes and healthier rural communities.”¹²

The Rural Broadband Initiative (RBI) programme has gone some way to providing access, however there is still further potential for vastly improved outcomes for regional/rural

¹¹ TUANZ Connecting Rural New Zealand - Insights from the 2016 Rural Connectivity Symposium (28 April 2016), p. 3 <http://www.rhaanz.org.nz/wp-content/uploads/2016/05/Insights-from-the-2016-Rural-Connectivity-Symposium.pdf>

¹² *Ibid.*

customers. Blue Reach has advised that [C-I-C](See Appendix A for further discussion on this point).

2.1.4 Competitive effects of the proposed merger (factual)

Target wholesale customers of the Blue Reach network would be TSPs who do not own their own mobile network. That is, TSPs other than Vodafone, Spark and 2degrees as those networks would presumably use their own networks to self-supply fixed wireless services. As a result, the ability of a new open access fixed wireless network, such as Blue Reach, to gain sufficient scale will be dependent on the viability of small to medium size TSPs. If the merger results in those types of TSPs failing to expand by effectively restricting the pool of contestable customers, then this would jeopardise the viability of the Blue Reach business model. This would put at risk the competition benefits in the wholesale market that are set to occur under the counterfactual discussed above.

2.2 Retail fixed network service markets

2.2.1 Market definition

For the same reasons discussed with regard to the definition of the relevant wholesale market, the relevant retail market would include services provided over copper/DSL, HFC, fibre and fixed wireless. With regard to the customer dimension, it is the provision of service to residential consumers that is of primary relevance.

As many customers continue to purchase a bundle of broadband and fixed telephony services, it is likely that telephony does fall into the same market as broadband. Therefore, the market definition adopted in this report is the market for the supply of retail broadband and telephony services at fixed locations.

2.2.2 Market shares and concentration

Spark's broadband market share has fallen over time (as is evident from the Commission's estimates in Figure 1) and now sits at around 48%. It is followed by Vodafone with an estimated 29% share and Vocus with 15% share of broadband connections (see Figure 2 below). The remaining 8% of connections is accounted for by a large number of small TSPs.

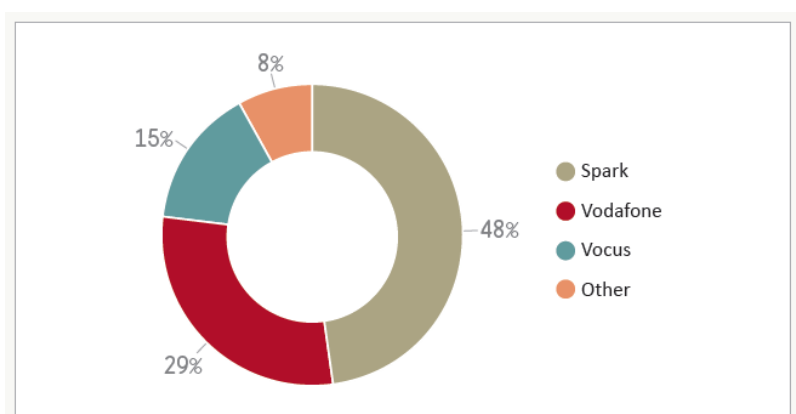
The 2015 Internet Service Provider Survey published by Statistics NZ indicates that in total there were only 4% of ISPs (3-4 ISPs) that had a 5% or more share of Internet subscribers (ie, 100,000 or more subscribers). A further 7% of ISPs (6 ISPs) had around 1% to 5% share and a large number of other smaller ISPs had less than 10,000 subscribers.¹³ In total, more than half of ISPs had less than 1,000 subscribers.

¹³ Statistics New Zealand, *Internet Service Provider Survey: 2015*, Table 8.

Following a period of consolidation in recent years, market concentration in New Zealand is extremely high when compared internationally. For example, the 3-firm concentration ratio (the sum of market shares for the three largest firms) for fixed broadband in NZ is 92%¹⁴, as compared with 69% in Australia¹⁵ and 74% in the UK¹⁶.

The market shares contained in Figure 2 imply that the subscriber share HHI is above 3370.¹⁷ This is only slightly below the HHI in the mobile market and is substantially above the threshold of 2,500 that is typically used to identify a highly concentrated market.¹⁸

Figure 2: Estimated broadband retail market shares



Source: Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 22.

2.2.3 Market outcomes

International broadband price comparisons published by the Commerce Commission find that New Zealand prices:

- for bundles of voice and broadband are generally somewhat above the average of the benchmark set
- for naked broadband are more markedly above the benchmark average than the voice and broadband bundles
- are further above the international average for baskets that include a greater amount of data.

These international comparisons would tend to indicate that there is potential for improvement in NZ pricing outcomes.

¹⁴ Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 22.

¹⁵ ACCC (February 2016), *Competition in the Australian telecommunications sector*, Figure 2.6 page 24.

¹⁶ Ofcom (4 August 2016), *The Communications Market Report*, p. 151.

¹⁷ This is the sum of the squares of the largest 3 RSPs – ie, $48 \times 48 + 29 \times 29 + 15 \times 15 = 3370$. Taking into account the remaining 8% would increase this HHI.

¹⁸ See for example: United States Department of Justice and the Federal Trade Commission (2010), *Horizontal Merger Guidelines*, Section 5.3.

There are, of course, a number of limitations of international comparisons. In the case of fixed broadband, one consideration is that a significant proportion of the price (as well as line speed) relates to the underlying wholesale price and product definitions, which are generally set through regulation, or through UFB contract negotiation.

Of more interest when assessing the extent of retail competition is competitive rivalry between TSPs, including how retail prices have changed over time relative to the wholesale price. The Commerce Commission made the following observation in a May 2016 media release:

Wholesale broadband prices are \$4 less now than 18 months ago, but the most popular voice and broadband retail bundles are generally more expensive than at that time, albeit with higher data caps.

“The trend, globally and in New Zealand, has been for consumers to get increasingly more data for their dollar whether via mobile or broadband plans. We wouldn’t have expected copper broadband retail bundles to be more expensive now than they were in 2014, given the drop in wholesale costs. We are keen to better understand the drivers behind this price rise and will keep an eye on competition in this particular market. It will pay for consumers to shop around,” Dr Gale said.¹⁹

This result is unexpected in a market with a large number of participants and could indicate a competition concern. It may be that this reflects the high degree of concentration, with competition primarily limited to three key parties and smaller TSPs exerting only a limited competitive constraint. (As discussed below in section 2.2.4 there are a number of factors constraining expansion for small to medium sized TSPs).

The Commerce Commission also makes the observation that “Broadband prices have become more dispersed.” It gives the example that by March 2016 an average user of a fixed line broadband and voice bundle needed an 80GB plan from Spark or Vodafone at \$95 per month or a 100GB plan from Slingshot priced at \$75.²⁰ Significant price differentials for these bundles remain as at November 2016.²¹ Typically price premiums sustained by larger

¹⁹ Commerce Commission Media Release (26 May 2016) “Telco report highlights growth of mobile and video streaming services” <http://www.comcom.govt.nz/the-commission/media-centre/media-releases/detail/2016/telco-report-highlights-growth-of-mobile-and-video-streaming-services>

²⁰ Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 25.

²¹ As at 9 November, Spark and Vodafone continue to maintain a significant price premium for customers requiring 80GB of data. The Slingshot price for a broadband and voice bundle remains at \$75 per month for 100GB (<https://www.slingshot.co.nz/plans/builder?cap=102400>). The Vodafone bundle is now priced at \$90.99 per month (<http://www.vodafone.co.nz/broadband/ultra-fast-fibre/?data=80gb&speed=fastestUFB100&phone=no&tv=skytv&onaccount=no>). Spark’s bundle provides voice plus 60GB of data for \$84.99 or 120GB for \$94.99 (<https://www.spark.co.nz/shop/internet/>)

operators would be considered evidence of market power that is not fully constrained by smaller suppliers.²²

2.2.4 Barriers to entry and expansion

With regard to the retail fixed service markets, the availability of regulated open access wholesale products removes barriers associated with the high sunk costs of network deployment. However, a remaining entry and expansion barrier is achieving the necessary scale to compete head-on with the largest three TSPs.

Difficulties faced by small scale TSPs include that:

- Backhaul and international transmission are typically priced with a structure that effectively provides substantial scale discounts. This means that the unit cost of a provider that uses a low capacity circuit, for example, will be substantially higher than a large provider who uses a higher capacity circuit.
- There are a number of fixed and sunk costs, for example, those associated with:
 - Marketing, including developing a widely known and trusted brand
 - Developing the capability to provide interconnection (ie, using SS7 signalling) even if the retail service provided is based on voice-over-IP
 - Set-up costs of becoming a customer of wholesale services from Chorus and the LFCs, although this can be addressed by purchasing Chorus products through a third-party
 - Billing system costs
 - Operations and Business Support Systems

The prevalence of a large number of very small ISPs, and a small number of very large ISPs and few in between would seem to indicate that ISPs are able to operate effectively at a very small scale by serving a particular niche (eg, a small geographic area), but that expanding to become a mainstream national TSPs is very challenging. To do so, a TSP must make very significant marketing investments to develop a reputable brand with widespread customer awareness. Spark's advertising, promotions and communications expenditure was

²² A lack of customer satisfaction would seem to support the hypothesis that smaller TSPs are not exerting a huge competitive constraint on the large service providers. With strong competition, one may expect high customer satisfaction. However, the two largest retail telecommunications providers, Vodafone and Spark, have recently been found to be the two most complained about firms in New Zealand according to the Commerce Commission. Although this may related to the size of the two companies and the large number of customers they have, it is notable that the Commission found that "FTA complaints about telecommunications providers have increased by 20% (79 complaints) from 2014, and have doubled from 2013 levels (from 234 to 459)." Commerce Commission (September 2016), *Consumer Issues 2016*, para 56.

\$78m in 2015 and \$77m in 2016.²³ Competing with established brands where such large investments are being made would require very significant scale.

Evolving from being a small niche player to a large national TSP also involves significant sunk costs in moving from small bespoke systems for billing and operations to larger more automated systems that can deal with much larger volumes of subscribers.

Bundling

Bundling of fixed and mobile services are increasingly becoming a feature of telecommunications markets, such that in future (or even now) there may also be a significant bundled market for fixed and mobile services. Other services such as content and potentially utility services (such as electricity) may also form part of that bundled market.

It is clear from market developments that service providers consider that bundling will be an important feature of competition in future. Examples of actions by market participants that indicate this include: the acquisition by 2degrees of a fixed network service provider (Snap); all three mobile networks now providing bundled service offerings; and Slingshot commencing the provision of mobile services using an MVNO arrangement.

Bundling can provide benefits to consumers by allowing them to purchase multiple services from one supplier and benefit from bundled discounts which likely reflect (at least some proportion of) the cost efficiencies suppliers can achieve through jointly marketing and selling the bundled services. Bundling could also provide further consumer benefit by leading to innovative converged service offerings. However, there is also potential for bundling to form a strategic barrier to competition.

To the extent that the bundled offers cannot be replicated, or competed with through an alternative bundle construct they can potentially prevent rivals from acquiring customers and have the effect of lessening competition. This has lead regulators in some countries to intervene.²⁴ Bundling can potentially be used to leverage market power from one market to another.

²³ Spark Annual Report 2016, p. 54

²⁴ For example, as explained by the OECD: "Communication regulators may also need to monitor competition for bundles, as they do for stand-alone services, to ensure that competition is not diminished by the use of bundling ... In a number of countries, dominant fixed operators of those with significant market power (SMP) are precluded from bundling unreasonably, or are required to offer stand-alone services (eg, incumbent operators in Austria, Belgium, Germany, Greece, Ireland, Italy, Korea, Slovak Republic, Slovenia and Switzerland). That being said, service bundling, especially mixed bundling, makes economic sense in some cases, for example, by allowing the allocation of fixed costs across a number of different services. It also creates opportunities to launch innovative services and provides customer benefits such as unified billing, and in some cases simpler offers for consumers." *OECD Electronic Communications Outlook* (p. 181)

²⁴ Commerce Commission (September 2016), *Consumer Issues 2016*, para 56.

The effect of fixed-mobile bundling as a hindrance to retail broadband competition is likely to become increasingly relevant in future. While non-discriminatory open access to wholesale fixed network services has become a central component of telecommunications policy and regulation in New Zealand, the same principles are not applied to mobile network services. Given the significance of bundling to consumers there is real potential for bundling to have the effect of a strategic barrier to entry/expansion.

2.2.5 Concluding comments on the current state of competition

Analysis of the retail markets for the supply of telecommunications services at fixed locations reveal mixed outcomes – there are a large number of small TSPs, but the market is highly concentrated, and sustained price differentials between the largest two TSPs and smaller TSPs raises concern about the extent of competition.

A key concern looking forward is the ability of large incumbents to use bundling to create strategic barriers for smaller players to compete. Key factors in how this develops include: (a) whether the Vodafone-Sky merger is allowed to proceed; and (b) the extent to which a competitive MVNO offering is provided (discussed in more detail below in section 3).

2.2.6 Market developments under the counterfactual

The entry of Blue Reach as a wholesale-only provider of 4G fixed wireless services and later 4G/5G MVNO services is likely to enhance competition in the retail market for residential broadband services in a number of ways:

- It will provide improved outcomes for regional consumers that are currently underserved by copper, through the availability of an open access wholesale fixed wireless service.
- It will allow TSPs to compete effectively with vertically integrated fixed wireless providers such as Spark and Vodafone.
- It will provide a national alternative to fibre, through what is likely to be a lower cost means for TSPs (especially those with small scale) to compete. The wireless last-mile aspect means that high costs and customer disruption associated with lead-ins to customer premises (and associated trenching etc) can be avoided.
- Crucially, having an open access wholesale mobile offering (MVNO) allows a broad range of competitors to supply fixed-mobile service bundles.

2.2.7 Competitive effects of the proposed merger

On the assumption that the merger reduces the set of contestable customers, particularly those with high ARPU, for Vodafone's rival TSPs this will make it even more difficult than is currently the case for small to medium sized TSPs to achieve efficient scale. This will likely perpetuate a highly concentrated market with weakened challenger TSPs. The result is an

increase in the unilateral market power of the largest TSPs as well as enabling tacitly coordinated behaviour.

Moreover, by reducing the ability of small to medium sized TSPs to expand, the viability of a Blue Reach as an open access supplier of wholesale fixed wireless and mobile services will be threatened. This in turn further reduces the ability of small-medium sized TSPs to expand by reducing competition in the wholesale fixed and mobile markets, which further entrenches the strong position of the existing large TSPs.

3 Competition in the mobile telecommunications markets

This section first examines competition in the wholesale markets for the provision of mobile telecommunications services (section 2.1) and then discusses the retail markets (section 2.2).

3.1 Wholesale mobile markets

The following analysis focuses on the supply of mobile virtual network operator (MVNO) services. It is noted that there is a number of other wholesale mobile markets (for example, for the supply of national roaming services; colocation/access to infrastructure; and mobile termination services). However these are not examined in this report as it is the supply of MVNO services that the merger has the potential to impact the most.

3.1.1 Market definition

The relevant wholesale market would seem to include the full bundle of services sold to MVNOs – that is, voice, messaging and data. The SSNIP test is unlikely to result in other services (such as wholesale fixed network services) being sufficiently substitutable for wholesale MVNO services.

As a result the market definition adopted for the purposes of the following analysis is the national market for the provision of wholesale MVNO services, including voice, messaging and data.

3.1.2 Current state of competition in the wholesale MVNO market

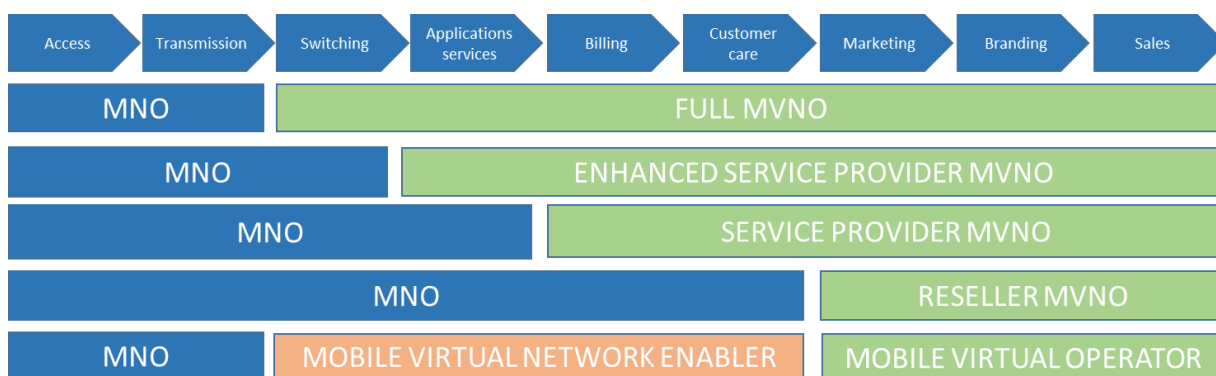
MVNO market outcomes

Market outcomes, particularly when compared internationally, imply that the supply of MVNO services has not developed into a competitive market in New Zealand. The Commerce Commission found that as at 30 June 2015 the number of connections supplied

by MVNOs was less than 20,000,²⁵ which is equivalent to less than 0.5% of all mobile connections. In comparison, in Australia MVNOs held a 10% share of connections as at June 2015²⁶ and in the UK Ofcom found in 2014 that MVNOs supplied 16% of mobile connections.²⁷

There is a range of types of MVNO services, which vary according to which functions are carried out by the MNO and which are performed by the wholesale customer. See for example, Figure 3, which sets out a range of options for MVNO arrangements ranging from a reseller model where the reseller only carries out the sales, marketing and branding functions to a full MVNO model.

Figure 3: Types of MVNOs



Source: Reproduced from Corrocher, N and L Lasio (December 2013), Diversification strategies in network-based services: The case of mobile virtual network operators, *Telecommunications Policy*, Volume 37 Issue 11, pp. 1110-1123.

MVNO arrangements that currently exist in New Zealand appear to be those towards the right hand of the diagram in Figure 3 such as a Reseller or Service Provider MVNO. MVNO services supplied in a more competitive market could look quite different to that in which all MVNO suppliers are vertically integrated retail mobile service providers. For example, it may be more likely that Full MVNO options would be available, providing more scope for differentiation and deeper levels of competition than is currently possible by MVNOs.

Barriers to entry and expansion

Supply of MVNO services effectively requires the deployment of a mobile network. There are a number of barriers to entry and expansion, which limits the number of mobile network owners (MNOs) and consequently the number of suppliers of wholesale MVNO services. Key barriers include the following:

²⁵ Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 28.
²⁶ ACCC (February 2016), *Competition in the Australian telecommunications sector - Price changes for telecommunications services in Australia*, p.29
²⁷ Ofcom (31 July 2015) *Anticipated acquisition by BT plc of EE Limited - Ofcom’s Phase 2 submission to the CMA*, p.12.

1. **Access to spectrum:** Spectrum is a fundamental requirement for the provision of mobile services and is a limited resource. The way in which spectrum is allocated is a major factor in determining the competitive structure of the wholesale mobile markets.

Demand for mobile data continues to increase rapidly. The Commerce Commission in its Annual Telecommunications Monitoring Report found that the amount of mobile data consumed by retail customers in 2014/15 nearly doubled from the prior year, even though WiFi over fixed lines is often used for mobile data offloading. The Commission concludes that “strong growth in mobile data consumption is likely for the foreseeable future.”²⁸

In this context, having capacity to handle data traffic will be key to a mobile network’s ability to remain competitive. High data volumes will force all networks to provide data traffic capacity using the most efficient means available to them.

2. **Large sunk costs/access to capital:** There are clearly very significant investments associated with building a mobile network, which requires access to large amounts of capital. As is discussed below, the changing economics of mobile network deployment (particularly in urban areas) mitigate this to a degree, as well as the ongoing growth in demand for mobile services.
3. **Economies of scale/minimum efficient scale:** Achieving efficient scale is necessary for entry to be sustainable. Although this (along with spectrum availability) will limit the number of networks, it can be facilitated through network sharing (including national roaming). As discussed below in section 3.1.3, international developments indicate that 4 mobile networks are common internationally, even in countries with a low population.
4. **Access to national roaming:** Access to national roaming would generally be required by a new entrant network in order to provide attractive MVNO services. Regulation provides a back-stop to commercial negotiation.
5. **Resource Management Act (RMA) issues:** The requirement for consent under the current Resource Management Act (RMA) increases the cost of new cellsite deployment relative to the cost incurred when Spark and Vodafone initially built many of their cellsites. However, as discussed below, in the 5G context the small size of the equipment and the ability to mount it on buildings and other existing infrastructure would substantially reduce the constraints imposed by the RMA, reduce the need to get RMA consents, and reduce the network deployment costs in future.

²⁸ Source: Commerce Commission, *Annual Telecommunications Monitoring Report 2015*, p. 33.

The evolving economics of mobile network deployment

The economics of mobile network deployment are markedly different in the 4G/5G setting than they were in the 2G/3G context. This has significant implications for the prospect of new entry going forward.

Firstly, 4G and 5G networks are IP-only, rather than involving circuit-switched voice. This allows 4G/5G MNOs to avoid significant complexities of designing, installing and operating 2G/3G networks, which in turn reduces cost.

Secondly, increased competition between equipment vendors following entry of new start-ups as well as the move of smaller vendors who have previously specialized in WiMax into LTE, has cut costs dramatically. For example, Blue Reach has stated that [C-I-C] (This is evident from the material provided by Blue Reach in confidential Appendix A – see Table 1). At the same time, the increasingly aggressive competition between vendors has also brought innovation and a greater willingness to provide customised solutions and applications, even on a relatively small scale.

Thirdly, the greater capacity and improved latency with the capability of providing “HD voice” services makes the use of fixed wireless over 4G and 5G networks a much more attractive substitute for fixed broadband and voice than was previously the case with 2G or 3G networks. As is discussed in more detail below in section 2, this means that 4G provides a very real alternative to copper-based broadband outside of UFB areas, and in future 5G may provide sufficiently high bandwidth to form an alternative for fibre, for at least some customer segments.

Finally, the deployment of 5G networks, in particular, involves the use of a large number of small cell-sites, rather than a small number of large sites as was typical of earlier network deployments. The small size of the equipment (for example, being comparable to the size of a briefcase) means that it can easily be located on existing infrastructure, such as buildings or utility poles, rather than requiring purpose-built towers. Although more sites are required, the cost of each site is low. Blue Reach have advised that [C-I-C]

Looking further ahead there are a number of possible 5G enhancements still under development that could provide wireless mesh networking (allowing increased coverage without additional cell sites) and more seamless movement between wireless access technologies.

Although there are significant barriers to viable mobile network deployment, which implies that the number of networks and wholesale MVNO suppliers will be limited, the above factors have the potential to enhance the prospects of new entry and viability of a fourth mobile network. At the same time, the broader range of applications enabled by 4G and 5G

networks would indicate that demand and revenue opportunities will continue to grow due to the increased speed of 5G networks as well as the application of narrowband LTE to Internet-of-Things (IoT), further increasing the likelihood that a fourth mobile network (and wholesale MVNO provider) is a viable prospect.

3.1.3 Market entry under the counterfactual

Blue Reach intends to deploy a 4G (and later 5G) network and supply wholesale MVNO services on an open access basis. Entry by Blue Reach into the wholesale MVNO market by deploying a mobile network is likely to be highly disruptive. Given that all existing suppliers are vertically integrated, the Blue Reach wholesale-only model has the potential to hugely change the shape of the wholesale MVNO market (and the downstream retail market).

Vertically integrated mobile networks have only limited incentive to provide MVNO services, particularly in a concentrated market. There may be some incentive to provide MVNO services to retailers that are more efficient than the vertically integrated MNO at targeting specific segments. This increases the MNO's overall wholesale share of mobile network connections. Outside of those segments MVNO supply threatens to cannibalise the vertically integrated MNO's retail business.

It seems logical to expect that as bundling of fixed and mobile (and other) services increases the incentive of vertically integrated MNOs to supply MVNO services diminishes. In the presence of bundling, offering MVNO services threatens to cannibalise not only downstream mobile revenues but also the margins available on bundled products such as fixed broadband and content. This is because when a vertically integrated firm loses a bundled service customer to an MVNO it loses the margin available on the entire bundle.

At the same time, increased fixed-mobile bundling will make it even more important that MVNO services are made available so that TSPs that don't own a mobile network are able to compete by offering a fixed-mobile bundled service offering.

In the fixed network context, concerns around the effects of vertical integration on incentives for non-discrimination wholesale supply were so high that the drastic step was taken to structurally separate Telecom. In the mobile context, wholesale supply of MVNO services appears to be floundering.

In some countries MVNO access has been regulated. While that is one approach to ensure that the service is provided on reasonable terms, in the current context Blue Reach's entry provides a market-led alternative to regulatory intervention.

The Blue Reach model is innovative and disruptive, particularly because as a wholesale-only service provider it does not need to protect retail market share. It would therefore be expected to compete much more aggressively on price in the supply of wholesale MVNO

services than vertically integrated MNOs. It would also have strong incentives to cater to the demands of its wholesale customers and provide the types of MVNO offerings that they required. This may result in deeper MVNO products – eg, such as the “full MVNO” service offering described in Figure 3.

International observations on four-player mobile competition

Internationally the presence of a fourth mobile network operator (MNO) is common – half of all OECD countries have four or more MNOs.²⁹ This is not limited to those countries with a large population size. For example, of the 10 lowest population OECD countries (which includes New Zealand), four have four or more mobile networks: Finland, Iceland³⁰, Luxembourg, Slovenia.³¹

Regulators, competition authorities and policy makers internationally have expressed strong support for the presence of four or more mobile networks. For example, a recent working paper by the OECD found that:

“... in markets introducing new players or maintaining at least four operators, investments in new network infrastructure increase and are pulled forward by existing operators, to defend against challengers.”³²

The European Commission (EC) has recently shown a preference for maintaining competition between four mobile networks, effectively blocking two mergers from four to three mobile networks due to concerns that this would lessen competition, and requiring in a third merger that four-player competition continue in some other form. In particular:

- In April 2015, the EC opened an investigation into the proposed merger of TeliaSonera and the Danish telecommunications activities of Telenor. The EC had concerns that this would reduce the incentives on the merged entity and its competitors to compete aggressively. The companies abandoned the merger, indicating that they were not able to agree with the EC on conditions to create a new mobile entrant.³³

²⁹ See Annex 1 of the following paper for a list of the number of mobile networks in each OECD country: OECD (8 January 2015), “Wireless market structures and network sharing” OECD Working Party on Communication Infrastructures and Services Policy.

³⁰ It is noted that an acquisition of the smallest network, 365, by Vodafone is pending approval from the competition authority. <http://icelandreview.com/news/2016/09/01/vodafone-buy-365-media-8-billion>

³¹ Ireland also had four networks, however they have since been consolidated to 3.

³² OECD (8 January 2015), “Wireless market structures and network sharing” OECD Working Party on Communication Infrastructures and Services Policy, p.9.

³³ European Commission (08 April 2015), Mergers: Commission opens in-depth investigation into the proposed merger of TeliaSonera and Telenor’s Danish telecommunications activities [Press release]

http://europa.eu/rapid/press-release_IP-15-4749_en.htm

Thomas, D. (11 September 2015) Danish telecoms merger shelved after competition concerns, *Financial Times* <https://www.ft.com/content/c935224c-5853-11e5-97e9-7f0bf5e7177b>

- In May 2016 the EC blocked the acquisition in the UK of O2 by Hutchison. Its key concerns were that the acquisition would have reduced customer choice, led to higher prices, harmed innovation in the mobile sector and reduced MVNO competition.³⁴
- In September 2016, the EC approved the Italian merger of Vimpelcom's WIND mobile network and Hutchison's H3G mobile business, subject to the condition of divestment of sufficient assets to enable a new operator, French telco Iliad, to compete in the Italian mobile sector as a fourth network.³⁵

The initial EC media release on this 1 September merger clearance outlines three overlapping reasons for ensuring Italy had four MNOs, not three, noting that "These three competition concerns were very serious":

- the 4 to 3 transaction would have reduced the incentives of the MNOs to compete, likely leading to reduced choice and lower quality mobile services, and higher retail prices;
- the transaction would have reduced the number of MNOs willing to host MVNOs;
- the transaction made it easier and more likely that the remaining three operators would coordinate their behaviour in the market, likely leading to further price increases for consumers. That is, that there would be coordinated effects.

Similarly, in the US the Federal Communications Commission (**FCC**) has expressed concern with four to three mergers of mobile networks and it was observed that after the withdrawal of a proposed AT&T/T-Mobile merger in 2014 the two companies competed more aggressively with each other by offering cheaper pricing, unlimited plans and service innovation.³⁶

The Chairman of the Australian Competition and Consumer Commission (**ACCC**) recently indicated that a fourth mobile network in urban areas would be welcome in Australia.³⁷

The economic benefits that result from increased mobile competition are widely recognised. As stated by the OECD in a recent working paper:

³⁴ European Commission (11 May 2016), Mergers: Commission prohibits Hutchison's proposed acquisition of Telefónica UK [Press release] http://europa.eu/rapid/press-release_IP-16-1704_en.htm

³⁵ European Commission (1 September 2016), Statement by Commissioner Vestager on Commission decision to approve Hutchison/VimpelCom joint venture in Italy, subject to conditions [Press release] http://europa.eu/rapid/press-release_STATEMENT-16-2934_en.htm

³⁶ Remarks of Jon Sallet, Federal Communications Commission General Counsel As Prepared for Delivery At the Telecommunications Policy Research Conference: "The Federal Communications Commission and Lessons of Recent Mergers & Acquisitions Reviews" September 25, 2015 <https://www.fcc.gov/document/speech-general-counsel-jon-sallet-lessons-recent-merger-reviews>

³⁷ Communications Day (23 September 2016), "ACCC Chair and VHA CEO Berroeta react to TPG call for new mobile player."

Wireless networks and the mobile services they enable play a fundamental role in supporting economic and social development. Their contribution is critical in meeting a range of policy objectives, across the entire economy, something that has grown in recent years as the capabilities of these networks increased and competition drove innovation and inclusiveness. A key issue for policy makers and regulators, across the OECD area, are the most efficient market structures in their countries to build on these developments, promote investment and seize future opportunities.”³⁸

Implications for competition under the counterfactual

There are clear indications that:

- (1) four player MNO competition is common internationally and increases the intensity of competition leading to lower prices, more consumer choice and less incentive and ability for tacit coordination; and
- (2) the economics of mobile networks are changing dramatically, improving the business case for mobile network entry.

Given this, under the counterfactual, entry by Blue Reach has the real potential to substantially strengthen competition in the wholesale MVNO market. This is particularly the case given the novel and disruptive nature of the open access Blue Reach model.

3.1.4 Competitive effects of the proposed merger (factual) from reduced scale

Potential wholesale MVNO customers of Blue Reach would be TSPs (new or existing) who do not own their own mobile network. This means that they would typically be small to medium-size TSPs.

On the assumption that the merger will lead to reduced scale because TSPs are unable to effectively contest the customer segment that purchases Sky premium content and that these customers will tend to have higher than average ARPU, it is quite possible (or even highly probable) that a number of small and medium-sized TSPs will no longer achieve minimum efficient scale. This in turn reduces the potential scale that Blue Reach can achieve and limits its ability to achieve minimum efficient scale.

As a result, the proposed Sky-Vodafone merger has the potential to restrict the ability for a fourth mobile network to viably compete, and risks substantially lessening wholesale MVNO competition (and benefits for downstream retail competition) as compared with the counterfactual where the merger does not occur.

³⁸ OECD (8 January 2015), “Wireless market structures and network sharing” OECD Working Party on Communication Infrastructures and Services Policy, p.7.

Mobile network viability impacts are not limited to Blue Reach/the fourth network, but could also jeopardise the ability of 2degrees to gain sufficient scale to be financially sustainable. The loss made by 2degrees as disclosed in its 2015 financial statements indicates that it has not yet reached minimum efficient scale. On the assumption that the merger will reduce the portion of the residential market segment that is contestable, this will increase the difficulty in achieving minimum efficient scale. This will impact on the wholesale MVNO market, however, as the effects will be particularly acute in the retail market this is discussed further in section 3.2.6.

3.2 Retail mobile market

The last seven years have seen the entry and expansion of 2degrees, breaking the previous duopoly held by Telecom and Vodafone. 2degrees has been particularly successful in acquiring prepaid customers. However, 3-player competition has not yet extended as substantially into the postpaid and high Average Revenue Per User (ARPU) consumer and business markets.

Looking to the future: the ability to provide ubiquitous services, achieve scale efficiencies, availability of wholesale services and the ability to contest the business market are key interrelated determinants of the sustainability of retail competition.

3.2.1 Market definition

The Commission has identified the relevant market as being the national retail market for the provision of mobile services. We note that while overall market entry and exit decisions for vertically integrated mobile networks would typically be made at a broad national level, we consider that there are at least distinct segments within that market that warrant separate consideration of competitive effects. There is an important segmentation between pre-paid and on-account users and between customer types (business and residential) in the latter category.

3.2.2 Market shares and concentration

The entry of 2degrees in 2009 strengthened competition in the retail mobile markets to a point, particularly in the supply of services to pre-pay customers. 2degrees quickly acquired customers, achieving a 20% share by end June 2012.³⁹ However, it primarily acquired customers that have a relatively low ARPU.

Despite 2degrees' entry, the retail mobile market remains highly concentrated. Although 2degrees' share of consumers grew until 2012/13, its share completely flattened after that point. Growth in 2degrees revenue, however, may indicate that it has replaced some lower

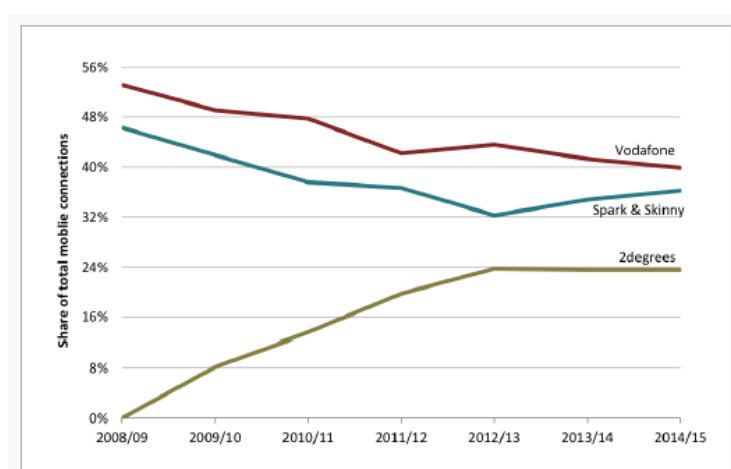
³⁹ Commerce Commission 2012 Annual Telecommunications Report, Figure 22.

value customers with higher value pay monthly or business customers. 2degrees publicly stated that in 2015 its Pay Monthly customer base increased by 25% and that a number of large business customers have selected 2degrees.⁴⁰

Spark's share of connections (including Skinny) has been increasing at the expense of Vodafone. The shares of Spark and Vodafone appear to be converging in the range of 35-40%.

As discussed above, MVNOs only have a share of less than 0.5% of connections.

Figure 4: Share of mobile subscribers

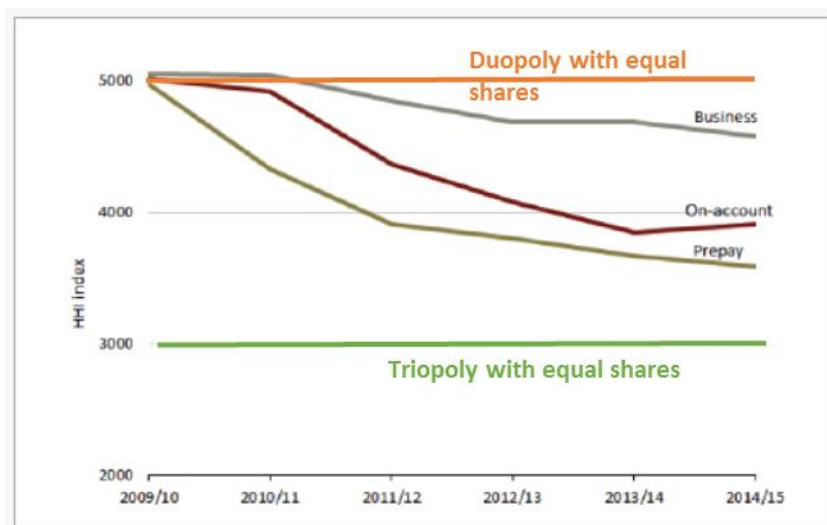


Source: Commerce Commission Annual Telecommunications Monitoring Report 2014-15.

As Figure 5 shows, although the mobile market HHI indicators were following a steady downwards trend in the first few years following 2degrees' entry, this has flattened, and in the case of on-account customers supply has actually become slightly more concentrated. Supply to business customers, having an HHI of more than 4,500, more closely resembles a duopoly than a balanced three-player market. An HHI measure of 5,000 results from a duopoly where each firm has 50% market share. In a 3-player market where each firm holds a third of the market, the HHI is 3,000.

⁴⁰ 2degrees (1 June 2016), 2degrees FY15 results – strong growth continues Revenue lifts 43.1% - EBITDA up 43.9% - mobile network reaches 95% population coverage [Press release] <https://www.2degreesmobile.co.nz/company/news-and-media-releases/2degrees-fy15-results-strong-growth-continues-revenue-lifts-43-1-ebitda-up-43-9-mobile-network-reaches-95-population-coverage/>

Figure 5: HHI (calculated on the basis of revenue)



Source: Commerce Commission Annual Telecommunications Monitoring Report 2014-15.

It is apparent from the segmented HHI concentration figures contained in the chart above that the prepaid market segment was substantially easier for 2degrees to enter and expand into than business postpaid services.

3.2.3 Market outcomes

International price benchmarking published by the Commerce Commission shows New Zealand ranking to be the middle of the group of OECD countries for baskets containing voice and data. Prices of small and medium mobile service baskets are below the OECD average, whereas the highest user service basket (500 calls + 2GB of data) is above the average.

However, the Commission's analysis also found that the price of mobile broadband for data-only devices in New Zealand to be among the most expensive in the OECD (ranked 28 and 33 out of 34 countries for the two data-only baskets considered), even though the price of the highest data plan had fallen significantly.⁴¹

Given that data use is growing rapidly, the poor performance of data-only pricing and the voice-data basket with the largest amount of data is concerning. The results of these comparisons could indicate that 3-player competition has been most effective at the low-use end of the market (eg, pre-pay) and least effective for higher use customers (such as businesses and post-pay consumers).

⁴¹ Commerce Commission *Annual Telecommunications Monitoring Report 2014-15*, pp. 38-40.

3.2.4 Barriers to entry and expansion

With regard to retail market competition, in addition to the need to either access wholesale MVNO services or deploy a mobile network and be a vertically integrated mobile retailer (which involves the barriers discussed above in section 3.1.2), potential retail barriers to entry and expansion are likely to include the following:

- Sunk costs of establishing a trusted brand
- Capital requirements of providing handset subsidies/financing
- Existing contracts and asymmetric information: At any one point in time, a significant proportion of business customers and postpay consumers are committed to contracts. Early resign practices of incumbents under which early termination charges (ETCs) are waived means that to acquire customers, an entrant needs to approach customers before the end of their contract and pay the customers' ETCs to their existing supplier. This substantially increases subscriber acquisition costs.
- Need for network reliability, coverage and speed: For example, a UMR survey carried out for the Commerce Commission showed network coverage to be the key mobile network attribute required by business customers.⁴²
- Ability to bundle and provide integrated fixed-mobile solutions: As discussed above, this seems set to be an important feature of competition. 2degrees has now purchased Snap which will improve its capability to provide integrated service bundles, at least for residential customers.

Looking forward, it will be crucial for 2degrees or any entrant to be able to offer 4G with comparable coverage to competitors to expand in the business market.

Conclusion of state of competition for mobile services

Entry by a third network in 2009, in the form of 2degrees, has brought significant benefits to consumers, particularly in the residential/prepay segment of the mobile market. However, its growth in share of customers ceased completely from 2012/13, and the extent of concentration in the business market segment still more closely resembles a duopoly than three-player network competition. This, together with the observation that prices in NZ compare least well internationally for large users and data-only plans, indicates that there could be significant benefits that could be achieved through intensified competition, particularly for business customers.

⁴² Source: UMR Research (December 2015), *Competition for Business Customers in the Mobile Industry: A Report for the Commerce Commission* p. 28.

3.2.5 Market developments under the counterfactual

As a wholesale-only network, Blue Reach will enable entry supply of retail mobile services by a range of parties through the availability of truly competitive MVNO services. Ultimately, the competition that the innovative and disruptive Blue Reach model would bring to the supply of MVNO services would translate to a more vibrant retail market and enable fixed service providers to offer fixed-mobile service bundles.

2degrees has yet to gain significant share in the business market. There is significant potential for either 2degrees itself or Blue Reach wholesale customers to bring strengthened competition to the business segment of the retail mobile market.

3.2.6 Competitive effects of the proposed merger (factual) from reduced scale

As discussed above, the loss made by 2degrees as disclosed in its 2015 financial statements indicates that it has not yet reached minimum efficient scale. On the assumption that the proposed merger will reduce the portion of the residential market segment that is contestable for Vodafone's TSP rivals, this will increase the difficulty in achieving minimum efficient scale. To the extent that this jeopardises 2degrees' viability this puts at risk both the strengthening of competition in the retail market since 2degrees entry as well as the further competition benefits that could occur if 2degrees were to expand further into the business market segment.

Similarly, on the basis that the merger could jeopardise the viability of the Blue Reach business model (as discussed in 3.1.4) there would be a loss of MVNO-based retail market entry that would otherwise occur in the counterfactual.

A study published by Ofcom in March 2016 contains a cross-country econometric analysis of the effects of the number of mobile networks on prices, and the effects of disruptive entry. It finds that an increase in the number of mobile networks reduces prices by 7.3% to 9.2%. It also finds that where a disruptive player is present prices are lower by 10.7%-12.4%. This brings the total effect of disruptive new entry to 17.2%-20.5%.⁴³ This gives an indication of the harmful effects of the impacts of the merger on competition, as a result of jeopardising the viability of either 2 degrees or Blue Reach (or both).

⁴³ Ofcom (15 March 2016), *A cross-country econometric analysis of the effect of disruptive firms on mobile pricing*.

Appendix A: Material provided by Blue Reach (Confidential)

[C-I-C]

Appendix B: Curriculum Vitae

CURRICULUM VITAE FOR EMMA LANIGAN

Emma Lanigan
Economist and Director
Link Economics Limited
Email: emma.lanigan@linkeconomics.com

PROFESSIONAL QUALIFICATIONS

M.A. Economics (First Class Honours), University of Auckland, New Zealand

B.A. Major in Economics, Minor in Mathematics, University of Auckland, New Zealand

Emma specialises in analysing regulatory issues, competition policy and commercial strategy and has advised clients in Australia, New Zealand, Europe, Asia, the Middle East and the Pacific Islands. In her consulting career, Emma has worked on a range of projects including anticompetitive conduct assessment, retail and wholesale pricing strategy, the establishment of regulatory compliance programs, regulatory policy analysis, cost modeling, cost-benefit analyses, the development of access prices, and the assessment of competitive effects of mergers and joint ventures.

Emma has a particularly deep knowledge of telecommunications markets, with 20 years of experience working for clients in the telecommunications industry including market participants and regulators. Industries other than telecommunications in which Emma has advised clients include airlines, health, financial services, transport, and pay television. Emma currently works for Network Tasman, an electricity lines company in the South Island of New Zealand as the Regulatory and Commercial Manager.

Recent consulting experience

- **Australian Department of Communications and the Centre for International Economics**
Preparation of cost estimates for the cost-benefit assessment of the Australian National Broadband Network (NBN). This project involved reviewing models of costs for Fibre-to-the-Premise (FTTP), Fibre-to-the-Node (FTTN), Hybrid Fibre-Coax (HFC), Fixed Wireless and Satellite technologies, extracting relevant resource costs and conducting sensitivity analyses.
- **Telstra Corporation**
Regulatory support to Telstra in relation to regulatory proceedings regarding access pricing for fixed and mobile network services.
- **Two Degrees Mobile Ltd NZ**
Analysis of national roaming pricing; provision of an expert report on the competitive effects of the Vodafone New Zealand-TelstraClear telecommunications merger; and economic advice in the context of the 700MHz spectrum auctions.

Provision of expert economic analysis for Two Degrees Mobile on a range of issues relating to Mobile Termination Rate (MTR) regulation including: MTR pricing principles, quantification of the competition benefits of MTR regulation, international benchmarking, and assessment of the overall welfare effects of regulation and the effects of on-net/off-net price discrimination.

Analysis of the competitive effects of the NZ government's rural broadband initiative.

- **The Bermuda Department of Telecommunications & Bermuda Regulatory Authority**

Support over a three year period, including market definition analysis, identification of electronic communications markets most likely to require *ex ante* regulation, state of competition analysis for each electronic communications market, designation of dominant operators, determination of appropriate regulatory remedies including retail price caps, and development of radio-spectrum policy.

- **Bemobile PNG**

Expert witness affidavit filed in Papua New Guinea on whether a rival's MTR pricing was anti-competitive. Preparation of expert reports for Bemobile for submission to the regulator (NICTA) on whether retail regulation was required in PNG to address pricing of on-net mobile services

- **BlueSky Samoa**

Appeared before the Samoan Competition Tribunal as an economic expert on an anti-competitive conduct matter in relation to a rival's pricing.

Retained by BlueSky Samoa (SamoaTel) to prepare expert reports on fixed and mobile termination rates and the review of cost models for submission to the Office of the Regulator in the context of an interconnection determination.

- **Tonga Communications Corporation**

Preparation of an expert report on interconnection rates in the context of arbitration on interconnection prices.

Representative assignments in previous consulting roles

- Advising Telecom Italia on the drafting and implementation of the EU electronic communications regulatory regime.
- Conducting market definition and market power analyses in the New Zealand, Australian, and Italian telecommunications industries, covering the fixed, broadband and mobile markets.
- Preparing a cost model for Foxtel to determine an access price for pay TV set-top boxes in Australia.
- Economic modelling of the impact of mobile termination charges on competitive outcomes in Australia.
- Assessment of the competitive effects of mergers and joint ventures in mobile markets for a large Australian telecommunications company.
- Analysis of incentives in relation to the provision of mobile co-location in New Zealand and submission of findings to the New Zealand Commerce Commission.
- Multiple secondments to Telstra to carry out regulatory functions for the Consumer and Business & Government customer units. These roles involved reviewing pricing proposals to check for competition issues, liaising with marketing and pricing staff and presentations to the ACCC.

- Preparing models to estimate likely customer responses to new bundled service packages.
- Market definition and market power analysis of the Japanese mobile market.
- Assessing the costs and benefits of functional and structural separation and optimal forms of implementation.
- Developing economic methodology and software for testing compliance with competition law in relation to price squeeze tests, including modelling of the relevant costs.
- Drafting expert witness statements in the context of anti-competitive conduct litigations relating to the telecommunications and health industries.
- Preparing business case analyses for clients to assess the financial impacts of new pricing plans.
- Assisting a large international telecommunications company to develop its 10-year strategic plan.
- Examination of price squeeze issues in relation to NGAN (Next Generation Access Network) services.
- Analysis of USO costing and funding mechanisms in Australia and New Zealand.
- Critically reviewing a cost model of FTTN (fibre to the node) services.
- Developing a price cap methodology for FTTN access pricing.
- Analysis of the macro-economic effects of mobile termination regulation.
- Preparing a cost model to determine international interconnection charges in Fiji.
- Part of a team that prepared an interconnection cost model for Telikom PNG.
- Analysing the structure of interconnection charging arrangements and the incentives arising from non-linear pricing structures.
- Market definition analysis of airlines markets.

PROFESSIONAL HISTORY

<i>Dec 2014 – present</i>	<i>Regulatory and Commercial Manager, Network Tasman</i>
<i>May 2012 – present</i>	<i>Economist and Director, Link Economics</i>
<i>Sep 2009 – May 2012</i>	<i>Independent Consultant, Lanigan Consulting</i>
<i>April 2008 – Sep 2009</i>	<i>Principal, Concept Economics</i>
<i>2004-2008</i>	<i>Principal, CRA International</i>
<i>2003-2004</i>	<i>Principal, Network Economics Consulting Group (NECG)</i>
<i>2002–2003</i>	<i>Managing Consultant, NECG, Australia</i>
	<i>Secondment to Telstra as a Regulatory Manager</i>
<i>1998–2002</i>	<i>Senior Consultant, NECG, Australia/New Zealand</i>
	<i>Secondments to Telecom New Zealand and Telstra</i>
<i>1996–1998</i>	<i>Consultant, Ergas & Associates, Australia/New Zealand</i>
<i>1995–1996</i>	<i>Research Assistant to Professor Henry Ergas, Centre for Research Economics and Communications, University of Auckland, New Zealand</i>

1995 *Data Analyst, Process Improvement Team, Airline Accounting Department, Air New Zealand, New Zealand (part-time)*

PUBLICATIONS

2009, "Price Squeezes and Vertical Discrimination on Next Generation Access Networks" with Henry Ergas and Eric Ralph, *Communications & Strategies, No. 78/2nd quarter 2010, p. 67-85.*

2002, "3G Network Sharing in the Australian Context." Paper presented at the Tokyo Mobile Roundtable May 2002.

2000, "The New Zealand telecommunications review: issues and perspectives." Paper presented at Industry Economics Conference, 10 July 2000.

1999, "A comparison of international telecommunications prices." With Sam Lovick. March 11, 1999.

1997, "Modeling Interconnection Agreements of Monopolistic Network Providers." Master's thesis, 1997.